

HELMINTHOLOGICAL ABSTRACTS

incorporating

BIBLIOGRAPHY OF HELMINTHOLOGY
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FOR THE YEAR 1953

Vol. 22, Part 3

163—Agricultural Gazette of New South Wales.

- a. ANON., 1953.—“New plant diseases.” 64 (8), 434-435.

(163a) Root-knot due to *Heterodera marioni* is recorded for the first time in New South Wales in *Allium porrum*, *Lespedeza stipulacea*, *Paonia albiflora* and *Pyracantha coccinea*. R.T.L.

164—Agronomy Journal.

- a. HANSON, C. H., ALLISON, J. L. & CHAMBLEE, D. S., 1953.—“The performance of *Lespedeza* strains on North Carolina soils infested with root-knot nematodes.” 45 (4), 143-146.

(164a) Sixteen strains and varieties of annual lespedeza (*Lespedeza stipulacea* and *L. striata*) were tested in soil infested with *Meloidogyne* sp. Forage yields and root-knot indices were measured and showed significant variations between strains in resistance to root-knot nematodes. A strain of *L. stipulacea*, No. F.C. 31480-43, was found to show resistance and has been released under the name Rowan lespedeza. It is also resistant to powdery mildew (*Microsphaera diffusa*). M.T.F.

165—American Journal of Digestive Diseases.

- a. NATT, M. P., LOPEZ-RICO, A. & YOUNG, V. M., 1953.—“Investigation of enteric infections in the Caribbean area. I. A survey of intestinal parasitism in Lombardia, Michoacan, Mexico.” 20 (4), 105-107.

(165a) The only helminth infections found in 338 individuals in Lombardia, Michoacan, Mexico, were *Ascaris lumbricoides* 27.2% and *Hymenolepis nana* 7.4%. The relative incidence in relation to age and sex is tabulated and indicates a greater prevalence in the lower age groups. R.T.L.

166—American Journal of Tropical Medicine and Hygiene.

- a. STIREWALT, M. A., 1953.—“The influence of previous infection of mice with *Schistosoma mansoni* on a challenging infection with the homologous parasite.” 2 (5), 867-882.
b. MELENEY, H. E., SANDGROUND, J. H., MOORE, D. V., MOST, H. & CARNEY, B. H., 1953.—“The histopathology of experimental schistosomiasis. II. Bisexual infections with *S. mansoni*, *S. japonicum*, and *S. haematobium*.” 2 (5), 883-913.
c. RITCHIE, L. S., HUNTER, III, G. W., NAGANO, K. & PAN, C., 1953.—“The distribution of the snail *Oncomelania nosophora*, intermediate host of *Schistosoma japonicum*, along the Tone River, Japan.” 2 (5), 915-925.
d. PRICE, D. L., 1953.—“Laboratory infection of the agouti, *Dasyprocta aguti*, with *Schistosoma mansoni*.” 2 (5), 926-929.

(166a) The influence of previous exposure on a second infection with *Schistosoma mansoni* cercariae was studied in mice. The numbers of worms maturing from second exposures were significantly less than in controls when the intervals between the exposures was one hour, five hours, one day and two months, but when the intervals were two days, one week and one month the numbers were almost equal. The reduction was due to a local inhibition of

* Titles so marked throughout this number have not been seen in the original.

cercarial penetration when the interval was one hour, five hours and one day. When the interval was longer than one day, there was no significant inhibition. That no immunity was observed at the one week and one month intervals but was present when two months had intervened suggests the possibility that eggs and their miracidia may have played a major role in the immunological response or that this was due to other factors such as the age of the mice, the comparative size of the worms and the length of time they were in contact with the host tissues.

R.T.L.

(166b) This is a study of the lesions produced by *Schistosoma mansoni* in different experimental hosts and a comparison of these lesions with those produced by *S. haematobium* and *S. japonicum*. Mice, hamsters, rats, guinea-pigs and rabbits were given bisexual infections of *Schistosoma mansoni*, *S. haematobium* and *S. japonicum* and the histopathological changes in the liver, intestine, spleen and bladder are described. In those hosts in which the worms mature earliest and attain the largest size, fertile eggs are deposited in, or are carried to, the smallest blood vessels. The most typical lesions are in the liver where they develop into characteristic pseudo-tubercles and eventually result in scars. In hosts in which the worms mature slowly, they remain relatively small. Egg deposition is slow and most of them are unfertilized, collapsed, and produce little or no reaction or ultimate scarring. *S. japonicum* eggs produce more severe lesions than those of *S. mansoni* or *S. haematobium* because they are often deposited in large groups and seem to exert a more acute toxic effect. Living worms do not cause a tissue reaction but dead worms give rise to intense perivascular reaction. The worms disappear and scar formation results. In the liver there is periportal infiltration by leucocytes especially in the early stages of infections. It is an allergic reaction which does not contribute significantly to fibrosis. Areas of coagulative necrosis in the liver parenchyma may be due to infarcts. In the mucosa and submucosa of the intestine and bladder, fertile eggs cause little tissue reaction but in the muscularis and serosa they resemble those in the liver. In the lungs, the eggs produce lesions similar to those in the liver. In the spleen, areas of focal necrosis were seen in early *S. mansoni* infections and increase of fibrous tissue in late infections in some mice. The early periportal cellular infiltration of the liver is an allergic phenomenon due to the presence of worms in the portal-mesenteric veins but does not contribute ultimately to liver cirrhosis.

R.T.L.

(166c) A survey of the distribution of *Oncomelania nosophora* in the Tone River valley in Japan was made from Sakai to Sukayama, a distance of over 75 miles. The snails were almost entirely limited to areas between the levees and the river channel. The marsh areas probably represent their natural habitat. Irrigation ditches and conditions associated with farming may constitute a secondary adaptation. In the Tone marshes, the wide and often thin distribution of the snails renders their eradication more difficult than in most other endemic centres in Japan but application of molluscicides by plane or helicopter may prove practicable.

R.T.L.

(166d) The agouti, *Dasyprocta aguti*, which occurs naturally in Mexico, Central and South America and is readily maintained in the laboratory, is shown to be susceptible to experimental infection with *Schistosoma mansoni*. The adult worms are found in the intra-hepatic portal veins and in the mesenteric veins but eggs in the faeces are scanty and appear irregularly.

R.T.L.

167—American Journal of Veterinary Research.

- a. HERLICH, H. & PORTER, D. A., 1953.—“Experimental infections of calves with the nematode, *Nematodirus helvetianus*.” 14 (51), 198–201.

(167a) A calf which was infected with 620 larvae of *Nematodirus helvetianus* developed no symptoms and gained weight normally. In two calves receiving 27,000 and 140,000 larvae respectively no clinical symptoms developed, but two weeks after infection they weighed 10 lb. and 8 lb. less than their respective controls and four weeks later they were 22 lb. and

38 lb. less. Two weeks after infection with a million larvae two other calves had lost 5 lb. whereas a control gained 9 lb.; four weeks later they weighed 10 lb. and 20 lb. respectively less than the control; definite clinical symptoms of parasitism including diarrhoea, anorexia and general weakness were observed from the 15th day. This supports the conclusion that the prepatent period of the parasite corresponds with the acute stage of the infection. The retarded weight gains in these two animals were still apparent, though less pronounced, six months after infection. P.M.B.

168—American Midland Naturalist.

- a. TIMM, R. W., 1953.—“Observations on the morphology and histological anatomy of a marine nematode, *Leptosomatum acephalum* Chitwood, 1936, new combination (Enoplidae: Leptosomatinae).” 49 (1), 229–248.
- b. VOGEL, M., 1953.—“New host records for *Mesocostoides* (Cestoda: Cyclophyllidae) in California.” 49 (1), 249–251.

(168a) A detailed account is given of the morphology of the male and female *Leptosomatum elongatum* var. *acephalum* which is raised to specific rank as *L. acephalum* Chitwood n.comb. Several new observations on the histological anatomy of the class Aphasmodia are contributed including (i) presence of a dorsal constrictor of the vagina, (ii) attachment of the retractor muscle of the spinneret, (iii) absence of a non-cuticularized strip between the intestine and rectum, (iv) presence of a prominent inner “egg membrane”, (v) presence of large cells in the zone of shell formation, (vi) presence of a “vulvar” plug serving as a valve. The cuticular layering in *Leptosomatum* and *Thoracostoma*, the presence of bacillary and sub-bacillary layers in the intestine of *Thoracostoma*, the number of chromosomes and the nuclei of the oesophago-intestinal valve in *Leptosomatum* are new features for the Leptosomatinae. R.T.L.

(168b) The lizards *Gerrhonotus coeruleus*, *Sceloporus occidentalis* and *Eumeces fasciatus* and the snakes *Thamnophis elegans* and *Crotalus viridis* are new hosts for *Mesocostoides* larvae, probably *M. variabilis*. Adult *M. variabilis* are recorded from *Vulpes macrotis*, *Canis latrans*, *Lynx rufus* and *Didelphis virginiana*. *Mesocostoides* sp. resembling *M. manteri* was found in the small intestine of *Urocyon littoralis*. All the hosts were caught in California. R.T.L.

169—Anales del Instituto de Biología. Mexico.

- a. CABALLERO Y C., E., BRAVO H., M. & GROCOTT, R. G., 1953.—“Helminths de la República de Panamá. VII. Descripción de algunos tremátodos de peces marinos.” 24 (1), 97–136.
- b. BRAVO H., M., 1953.—“Dos especies nuevas de Cryptogonimidae Ciurea, 1953, de Puerto Vallarta, Jalisco.” 24 (1), 137–145.

(169a) Of nine trematode species found in marine food fishes from the Pacific Ocean and now described and illustrated, three are new. *Microcotyle oceanicum* n.sp. from *Tylosurus fodiator* differs from related species in the formation of the anterior end and in the shape of the adhesive disc and of the ovary. *Pseudoacanthostomum panamensis* n.g., n.sp. from *Galeichthys seemannii* differs from *Acanthostomum* in the arrangement of the reproductive glands and uterus, from *Allacanthocephalus* in the development of the gonotyl, in the arrangement of the vitellogenic glands and the extension of the uterus, and from *Cryptogonimus* and *Paracryptogonimus* by the greater development of the cephalic spines and the arrangement of the reproductive glands. *Lecithochirium magniacetabulatum* n.sp. from *Caranx* sp. differs from other species in which the intestinal caeca penetrate to the ecsoma by the position of the testes. P.M.B.

(169b) *Cryptogonimus cirrhiti* n.sp. from *Cirrhitus rivulatus*, caught off the Pacific coast of Mexico, differs from *Cryptogonimus chili* and *C. diaphanus* by its greater size, the arrangement of the cuticular spines, the greater number of ovarian follicles and the structure of the gonotyl. *Paracryptogonimus mexicanus* n.sp. from the same host is distinguished from other species of the genus by various characters including the arrangement of the spines on the oral sucker, the longer oesophagus, the oblique position of the testes and the marked sphincter of the excretory pore. P.M.B.

170—*Annales Historico-Naturales Musei Nationalis Hungarici*.

- a. ANDRÁSSY, I., 1953.—“Eine neue Art der Gattung *Trilobus* Bastian.” Series nova, 4, 71–73. [Hungarian & Russian summaries p. 73.]

(170a) Andrassy describes and figures a new species, *Trilobus imberbis* n.sp., which he found in moss cushions together with other nematode species in Hungary. He distinguishes it from *T. grandipapilloides* Micoletzky and *T. brevisetosus* W. Schneider. J.B.

171—*Annales de Parasitologie Humaine et Comparée*.

- a. TIMON-DAVID, J., 1953.—“Recherches sur les trématodes de la pie en Provence.” 28 (4), 247–288.
- b. ARVY, L., 1953.—“Présence de *Cercaria setifera* (Monticelli, 1888 et 1914, nec John Muller, 1854) chez *Phyllirhoe bucephala* Per. et Les., à Villefranche-sur-Mer.” 28 (4), 289–299.
- c. THÉODORIDES, J., 1953.—“Sur un nématode parasite de la courtilière *Gryllotalpa gryllotalpa* (L.) (Orthoptera Gryllotalpidae): *Gryllophila skrjabini* (Serguiev) Basir var. *ovipolita* nov. (Oxyuroidea Thelastomatidae).” 28 (4), 300–304.
- d. CHABAUD, A. G., 1953.—“Un nouveau physaloptère parasite d'agame.” 28 (4), 305–311.
- e. GALLIARD, H. & LARIVIÈRE, M., 1953.—“Recherches sur l'éosinophilie au cours de la filariose à *Loa loa* et de son traitement. Effets de l'A.C.T.H. et résultats des tests d'insuffisance surrénale.” 28 (4), 312–320.
- f. DOBY, J. M. & LAURENT, P., 1953.—“Mermithidés parasites de larves de *Simulies* et provenance de l'Avre et de la Semoy.” 28 (4), 330–332.

(171a) During the summers of the years 1950–1953 Timon-David collected eleven species of trematodes from magpies in the area of Aix-en-Provence. Two of these, *Cyclocoelum* (*Pseudhaptiasmus*) *dolfusi* and *Remicola bretensis*, he has already described elsewhere as new to science [for abstracts see Helm. Abs., 19, No. 546b and 22, No. 21a]. He now amplifies and slightly amends his descriptions and gives a detailed, illustrated account of the lesions caused by *R. bretensis* in the kidney. *Metacercaria renalis* n.sp. was found encysted in the kidney of one magpie and is briefly described but the opacity of the cysts made it impossible to see any detailed structure. The other species found were: *Brachylaemus fuscatus* in the gut, *Prosthogonimus brauni* and *P. cuneatus* in the bursa Fabricii, *Tamerlania zarudnyi* in the kidney, *Brachylecithum lobatum* in the liver, and *Lyperosomum longicauda*, *L. petiolatum* and *Zonorchis panduriforme* in the gall bladder. S.W.

(171b) A single specimen of the nudibranch *Phyllirhoe bucephala*, collected from the plankton at Villefranche-sur-Mer, contained 13 cercariae identified by Arvy as *Cercaria setifera* Monticelli 1888 and 1914. Arvy redescribes and illustrates the cercaria, particularly the structure and histology of the anterior end, and lists the cercariae described by other workers which she believes to be identical with *C. setifera*. The excretory vesicle is cylindrical, exceptionally large and extends from the tail to the pharynx. The body is covered with tiny, fine spines and the tail is divided into segments by a membrane which bears paired groups of bristles, each group containing six bristles. S.W.

(171c) Théodorides accepts Basir's opinion [as yet unpublished] that *Thelastoma skrjabini* Serguiev, *Neyraiella neyrae* Sanchez and *Gryllophila gryllophila* Basir are the same species and should be named *Gryllophila skrjabini* (Serguiev) Basir. Basing his differentiation on Basir's description he describes and illustrates a new variety, *G. skrjabini* var. *ovipolita* n.var. from *Gryllotalpa gryllotalpa* in the French Pyrenees. The new variety is distinguished by the absence of spines on the egg (in which it agrees with the description by Sanchez) and the hexagonal shape of the mouth. In a footnote he states that in the original description by Serguiev there was no mention or illustration of spines on the egg. S.W.

(171d) Chabaud describes and illustrates *Abbreviata baltazardi* n.sp. of which one male and seven females were collected from *Phrynocephalus helioscopus* in Persia. Although very closely related to a number of species, many of them little known or inadequately described, the new species may be differentiated from them all by one or more of the following characters: the size, the size of the spicules (the right being 200 μ long by a maximum of 20 μ broad, the

left 320μ long and filiform), the size of the eggs, the way in which the uterus branches, the similarity in size of the submedian and other teeth and the pattern of the papillae in the pericloacal region in the male. S.W.

(171e) Galliard & Larivière have demonstrated the irreducibility of the eosinophilia in a case of loiasis in a 34-year-old woman even after apparent cure with hetrazan. The venous blood normally contained more microfilariae than did the capillary blood but both followed the same periodicity: the number of leucocytes and eosinophils in the blood did not vary in the same way as the microfilariae during the 24 hours in which samples of blood were taken. A Thorn test before treatment and two 21 and 31 days afterwards were all strikingly negative although the excretion of cortisone and 17-keto-steroids remained normal. 62 days after treatment the patient was perfused intravenously for 4 hours with 10 mg. of ACTH; this produced a striking fall in the number of eosinophils, from 9,000 to 593 in six hours, but within 24 hours the number had increased again to the same level as at the beginning of the experiment. The last Thorn test performed 37 days later showed the persistence and irreducibility of the eosinophilia. S.W.

(171f) From tributaries of the Somme and the Meuse Doby & Laurent collected a number of simuliid larvae which were fairly frequently parasitized by larval mermithids. They were unable to complete the life-cycle or to find the adult mermithids. S.W.

172—Annals of Internal Medicine.

- a. MUHLEISEN, J. P., 1953.—“Demonstration of pulmonary migration of the causative organism of creeping eruption.” 38 (3), 595–600.

(172a) In creeping eruption due to *Ancylostoma braziliense* it is unusual to find larvae in the sputum. A case is reported in which asthma developed one week after the onset of the skin lesions. Larvae were present in the sputum for 24 days. There was an eosinophilia of 24%. No evidence of pulmonary infiltration was obtained by X-ray of the chest. No hookworm eggs were found in the faeces although examined for longer than the average prepatent period of intestinal hookworm infection. R.T.L.

173—Annals of Tropical Medicine and Parasitology.

- a. VIRANUVATTI, V. & METTIYAWONGSE, S., 1953.—“Observations on two cases of opisthorchiasis in Thailand.” 47 (3), 291–293.

(173a) Adenocarcinoma of the liver with numerous *Opisthorchis viverrini* in the bile ducts occurred in two farmers resident in north-east Thailand. R.T.L.

174—Antibiotics and Chemotherapy. Washington.

- a. BROWN, H. W., MANN, P. H. & FRATTA, I., 1953.—“The effectiveness of antibiotics against intestinal helminths of the cat.” 3 (3), 243–248.

(174a) Administration of the antibiotics, aureomycin, terramycin, streptomycin, bacitracin and penicillin, to cats did not remove *Ancylostoma caninum*, *Dipylidium* sp. or *Taenia taeniaeformis* but was effective against ascarids in the following percentages: aureomycin 85.7% eliminated, terramycin 76.8%, penicillin 55.5%, bacitracin, 43.3% and streptomycin 40%. These results compare unfavourably with those obtainable by a single dose of hexylresorcinol. R.T.L.

175—Archives de l'Institut Pasteur de la Martinique.

- a. MONTESTRUC, E., 1953.—“Le parasitisme intestinal aux Antilles et à la Guyane françaises.” 6 (1/2), 3–18.

(175a) It is estimated that in Martinique, and probably also in Guadeloupe and French Guiana, about 80% of the population between 20 and 40 years of age have intestinal helminths,

including hookworm, *Trichuris*, *Ascaris*, *Schistosoma mansoni* (except in Guiana) and *Strongyloides*. The incidence of the first four species in 743 out of 1,032 soldiers from eight cantons of Martinique is tabulated. Hookworm varied from 53.1% in the canton of Diamant to 86.1% in Saint-Ésprit (100% in the commune of Rivière Salée), and schistosomiasis from 0% in Diamant to 20.4% in Basse-Pointe. Figures supplied by the Pasteur Institutes in Martinique, Guadeloupe and French Guiana are markedly lower than those obtained by Montestruc in Martinique. No distome infection has ever been encountered in any of these three areas.

P.M.B.

176—Auburn Veterinarian. Alabama.

- *a. NEWBERNE, J. W., 1953.—“Verminous pneumonia in an Alabama cat.” 9, 140, 148.
- *b. SCHWABE, C. W., 1953.—“Ocular parasitism in domestic animals.” 9, 152–156.
- *c. NISSEN, E. E., 1953.—“The symptomatology and pathology of canine heartworm infection.” 9, 171–172.

177—Australian Veterinary Journal.

- a. COLLINS, F. V., 1953.—“Pork measles.” [Correspondence.] 29 (7), 204.
- b. BEARUP, A. J., 1953.—“Life history of a spirometrid tapeworm, causing sparganosis in feral pigs.” 29 (8), 217–224.

(177a) Only two proven instances of *Cysticercus cellulosae* in the pig in Australia have so far been recorded. Collins now reports the occurrence in the musculature of an adult sow dressed at the abattoir in Adelaide of numerous cream-coloured, caseated and sometimes calcified lesions which were so degenerate that neither cysticerci nor hooks could be recognized. The pig came from Ororoo, South Australia.

R.T.L.

(177b) Since 1949 many wild pigs from western New South Wales have been condemned at abattoirs on account of sparganosis. In one district all of 49, and 24 of 38 of two consignments were condemned. Spargana from pigs from the Forbes district were fed to cats and dogs by Gordon & Forsythe and became adult in about two weeks. Eggs from the faeces of one of the cats were hatched in petri dishes containing Cyclopidae collected near Sidney. After three weeks, the copepods contained mature plerocercoids. With these, tadpoles, frogs, rabbits, rats, mice and pigs were successfully infected. The adult worms from the experimental cats belonged to the genus *Spirometra*.

R.T.L.

178—Beten-Vallar-Mossar. Uppsala.

- a. HOFLUND, S., 1953.—“Parasitfaran för betande djur.” 5 (2), 17–20.

179—Bollettino della Società Italiana di Biologia Sperimentale.

- a. PIANA, G., 1953.—“Mesenchimopatia da echinococchi.” 29 (1), 15–17.

180—British Journal of Pharmacology and Chemotherapy.

- a. BUEDING, E., PETERS, L., KOLETSKY, S. & MOORE, D. V., 1953.—“Effect of respiratory inhibition on *Schistosoma mansoni*.” 8 (1), 15–18.
- b. CHANCE, M. R. A. & MANSOUR, T. E., 1953.—“A contribution to the pharmacology of movement in the liver fluke.” 8 (2), 134–138.

(180a) Bueding *et al.* examined the respiratory inhibition and chemotherapeutic action of the cyanine dye, 1'-ethyl-3:6-dimethyl-2-phenyl-4-pyrimido-2'-cyanine chloride, on *Schistosoma mansoni* in hamsters. A prolonged course of treatment given by daily intraperitoneal injections of 3 mg. per kg. body-weight showed mild chemotherapeutic effect. The parasites taken from the host animals after treatment showed a decreased oxygen uptake. W.P.R.

(180b) Chance & Mansour have compared the effect of a number of drugs on the rhythmic activity of intact and degangliated preparations of *Fasciola hepatica*, and have demonstrated the presence of true cholinesterase and the formation of an acetylcholine-like substance *in vitro*. Acetylcholine chloride (concentration 10^{-4} - 10^{-3}) did not affect whole flukes but in degangliated flukes caused a contraction followed by a cessation of movement from which there was a spontaneous recovery after not less than 12 minutes. Eserine (concentration 10^{-5}) caused paralysis in both whole and degangliated flukes and intensified the action of acetylcholine chloride. Carbaminoylcholine chloride (carbachol) in concentrations from 10^{-4} to 2×10^{-4} produced complete paralysis in both preparations. The effect of the two choline esters was shown to be wholly or partially blocked by atropine and curare. These effects are different from those observed in ascarid preparations. The stimulant effect of sympathomimetic amines was remarkably similar to that observed in mammalian central nervous systems.

S.W.

181—British Medical Journal.

- a. WHITE, R. H. R. & STANDEN, O. D., 1953.—“Piperazine in the treatment of threadworms in children. Report on a clinical trial.” Year 1953, 2 (4839), 755-757.
- b. STANDEN, O. D., 1953.—“Experimental chemotherapy of oxyuriasis.” Year 1953, 2 (4839), 757-758.

(181a) Comparative clinical trials of piperazine hydrate, gentian violet and diphenan in 136 children with *Enterobius* infections showed that piperazine hydrate syrup, at a dose level of 50-75 mg. per kg. body-weight daily, was the drug of choice. Of those children who received over 50 mg. per kg. daily 97% were cured. Gentian violet also showed marked anthelmintic properties. Diphenan was inactive. It is remarked that spontaneous cure may be expected in 19% of cases of enterobiasis.

R.T.L.

(181b) The efficacy of 16 reputed oxyuricides and related compounds was tested in mice with naturally acquired *Aspiculuris tetraptera*. Only gentian violet and piperazine hydrate cleared the mice of infection. *A. tetraptera* is considered to be of considerable value in establishing the oxyuricidal efficiency of drugs prior to clinical trial.

R.T.L.

182—British Veterinary Journal.

- a. SOLIMAN, K. N., 1953.—“Studies on the relationship of lungworm infestation in cattle and their liver vitamin A reserves.” 109 (4), 148-154.
- b. ISHII, S., YAJIMA, A., SUGAWA, Y., ISHIWARA, T., OGATA, T. & HASHIGUCHI, Y., 1953.—“The experimental reproduction of so-called lumbar paralysis—epizootic cerebrospinal nematodiasis—in goats in Japan.” 109 (4), 160-167.
- c. WILSON, A. L., MORGAN, D. O., PARNELL, I. W. & RAYSKI, C., 1953.—“Helminthological investigations on an Argyllshire hill farm.” 109 (5), 179-190.

(182a) The mean vitamin A reserve in the livers of 31 cattle which died from or were killed as a result of parasitic bronchitis in the late summer of 1950 was 52.6 I.U. per gm. of liver, with an average of 66 I.U. per gm. in 23 animals aged over three years and 14 I.U. per gm. in eight aged one year or less. Normal control cattle were not available for comparison. The levels recorded by Stewart, McCallum & Watt (1952) in normal cows averaged 99.2 I.U. per gm. of liver in April and 404 I.U. per gm. in November; these figures include the carotene content which was not estimated in the present work. In freshly mature *Dictyocaulus viviparus* from the lungs of two of the cattle the vitamin A contents were 0.1 and 0.9 I.U. per gm. of worms respectively. A similar depletion in vitamin A reserves was observed in the liver of guinea-pigs experimentally infected with *D. viviparus* and *D. filaria*, when compared with controls.

P.M.B.

(182b) Further evidence is presented, from experimental infection of goats in Japan, in support of the view that the disease formerly known as “lumbar paralysis” and more recently termed “epizootic cerebrospinal nematodiasis”, occurring in goats, sheep and horses in Japan

and Korea and in goats in Ceylon, is due to the presence of immature *Setaria digitata* in the nervous system. Infective *S. digitata* larvae which were dissected from artificially reared *Armigeres obturbans* fed 13-15 hours previously on an infected ox (the natural host), were injected into the neck of nine goats, ten others being kept as controls. After a latent period of 14-38 days, seven of the infected goats showed unmistakable symptoms, i.e. acute or sub-acute motor weakness and incoordination, proceeding in some cases to complete paralysis and inability to stand; in six of these, examination of the nervous system revealed "the presence of part, or the whole of the pathological complex of cerebrospinal nematodiasis, i.e., a patchy or diffuse eosinophilic meningitis with, or without, a focus of malacia". The ten controls kept in the same building, were unaffected.

P.M.B.

(182c) On an Argyllshire hill farm on the west coast of Scotland, the helminth species infecting sheep, their severity and the variations in their seasonal incidence and egg production were studied. In general the infections were similar in pattern to those in sheep on the southern uplands although the climatic and grazing conditions were very different. The important species in Scottish sheep were *Ostertagia* spp., *Trichostrongylus* spp. and *Bunostomum trigonocephalum* but at times *Haemonchus contortus* occurred in large numbers although it was not generally prevalent. *Ostertagia* appeared to be the most important genus in the ewes in the spring and *Trichostrongylus* in the autumn and winter. The degree of infection with *Fasciola hepatica* varied. Some ewes showed the classical symptoms of heavy infection. The egg counts showed an increase in the spring. The worms were not sufficiently mature to be susceptible to anthelmintics until late March or early April. Treatment at this time should reduce larval contamination of the grazings but as *B. trigonocephalum* may be present in large numbers during the winter, its treatment could be combined with that for liver-fluke if sufficiently large doses of carbon tetrachloride were given.

R.T.L.

183—Bulletin de l'Académie Vétérinaire de France.

- a. GUILHON, J. & CHAUVIER, G., 1953.—"Action de l'huile thymolée sur le cénure sériel." 26 (3), 171-174.

(183a) Two rabbits with subcutaneous coenurus cysts were given three courses each consisting of 15 intramuscular injections of thymolised oil on alternate days with intervals of 10 or 20 days between each course. In one case the cyst disappeared completely and in the other there was a great diminution in size, although the small cyst which remained still showed slight viability when removed. Toxic effects were negligible. These findings are parallel with those described by Garcia in the treatment of hydatid in man in *Rev. clin. esp.*, 1951, 41 320-329.

P.M.B.

184—Bulletin. Mushroom Growers' Association.

- a. MORETON, B. D., 1953.—"Eelworms as pests of mushrooms." No. 41, pp. 149-152.

(184a) This is a general article in which the scattered pieces of information about the relationship of eelworms and mushrooms are brought together. Control measures and ways of preventing further attacks are also discussed.

J.B.G.

185—Bulletin of the National Society of India for Malaria and Other Mosquito-Borne Diseases.

- a. SINGH, J. & RAGHAVAN, N. G. S., 1953.—"Filariasis as a public health problem in India and its control." 1, 37-42.

(185a) This is an account of the prevalence and vectors of filarial infections in India. Other epidemiological considerations are discussed. A distribution map is appended. The social and psychological implications and the relative merits of the various methods of control are discussed.

R.T.L.

186—Bulletin de la Société Neuchâteloise des Sciences Naturelles.

- a. DUBOIS, G., 1953.—“Un parasite du guillemot, *Diplostomum mahonae* n.sp.” 76, 59–61.
- b. JOYEUX, C. & BAER, J. G., 1953.—“Quelques particularités du cycle évolutif de *Opisthoglyphe ranae* (Fröhlich, 1791) (Trematoda: Plagiorchiidae).” 76, 63–86. [English & German summaries p. 85.]
- c. EUZET, L., 1953.—“*Dicranobothrium*, un nouveau genre de cestode tétraphyllide, parasite de sélaciens.” 76, 87–91. [English & German summaries p. 91.]

(186a) Dubois describes *Diplostomum mahonae* n.sp. from *Uria aalge*. About 200 specimens were collected from a guillemot which died in the London Zoological Gardens. *D. mahonae* differs from the three other species of *Diplostomum* found in the guillemot by the size of the oral sucker which in the new species is larger than the ventral sucker, and in the size of the eggs which are relatively small. All the dimensions of the worms are tabulated. s.w.

(186b) Joyeux & Baer have studied the life-cycle of *Opisthoglyphe ranae* experimentally and in the field. They find that *Limnaea ovata* is a more favourable intermediate host than is *L. palustris* and that in the absence of a definitive host more metacercariae encyst in *L. ovata* than in *L. palustris*; this may be due to the thickness of the cuticle in *L. palustris* which makes penetration into the foot difficult. *Leptolimnaea glabra* probably also acts as an intermediary. Development in the snails ceases during winter but it can be artificially induced to continue if the temperature is raised. The cercariae penetrate the tadpoles either through the epidermis or by aspiration in the respiratory current into the mouth and branchial chamber. After penetrating the epidermis they encyst in the bucco-pharyngeal region until metamorphosis; if they enter the gut via the branchial chamber the cyst wall is dissolved and they become adult. *Triturus helveticus* and *Rana esculenta* were shown to be the most favourable definitive hosts, *R. dalmatina* to be less favourable and *Pelodytes punctatus* and *Alytes obstetricans* to be unfavourable. Adult amphibians can be infected by ingesting cercariae. s.w.

(186c) Euzet is of the opinion that *Platybothrium hypoprioni* Potter, 1937 is a synonym of *P. spinulifera* Southwell, 1912 but that they do not in fact belong to *Platybothrium* Linton, 1890. He therefore erects a new genus *Dicranobothrium* n.g., with *D. spinulifera* (Southwell, 1912) as type, and describes *D. harpago* n.sp. from *Negaprion brevirostris*. The description is based on five scolices and one worm about 2 cm. long in which the anatomy could not be seen. However, the scolex and form and arrangement of the hooks agreed with that in *Dicranobothrium*. The hooks are complicated in structure and divided into a number of parts for which Euzet introduces new terms. s.w.

187—California Citrograph.

- a. SUIT, R. F. & DuCHARME, E. P., 1953.—“Parasitic nematodes in relation to spreading decline of citrus.” 38 (9), 307, 319–322.

(187a) Investigations of a disease known as spreading decline of citrus in Florida have shown that it is caused by infestation of the feeder roots by *Radopholus similis* (Cobb) Thorne. Most damage is done to feeder roots below 30 in. in the soil and lesions containing nematodes were found to a depth of 12 feet. Search for *Tylenchulus semi-penetrans* and *Belonolaimus gracilis* in citrus groves showing spreading decline showed no connection between their presence or absence and this particular disease. Other nematodes found for the first time associated with citrus roots in Florida, but apparently not associated with spreading decline, are *Aphelenchus avenae*, *Hoplolaimus coronatus*, *Pratylenchus pratensis*, *Trichodorus* sp., *Xiphinema americanum* and *Hemicyclophora* sp. M.T.F.

188—Canadian Journal of Comparative Medicine and Veterinary Science.

- a. MCGREGOR, J. K., 1953.—“A research note on the use of sodium arsetarsol as a prophylactic agent in the control of enterohepatitis in turkeys.” 17 (9), 375–376.
- b. MACKIE, A., 1953.—“A simple method for the detection of phenothiazine.” 17 (9), 377–378.

(188a) Turkeys in which an initial outbreak of blackhead induced by ground infection had subsided and apparent clinical disease ended, then received a challenge infection of about

1,000 *Heterakis* eggs each and sodium arsetarsol was administered continuously in the drinking water at the rate of 35 gm. per five gallons. Tabulated data showed that while sodium arsetarsol had some preventive effect, this was not sufficient to be considered effective under field conditions. R.T.L.

(188b) The presence of phenothiazine in the gut content of a treated sheep was detected by the addition of perhydrol (30% hydrogen peroxide). Samples were evaporated to dryness on a water-bath, extracted with acetone and filtered. The filtrates were refluxed with animal charcoal. The colourless solution was shaken up with perhydrol and allowed to stand. A distinct red colour developed in the extracts from the large intestine and a faint colouration in those from the abomasum and small intestine. R.T.L.

189—Canadian Journal of Medical Sciences.

- a. COLLIER, H. B., 1953.—“Enzyme inhibition by derivatives of phenothiazine. VI. Inhibition of glyoxalase activity of human and rabbit erythrocytes.” **31** (3), 195–201.

(189a) Collier found that phenothiazone at a concentration of 10^{-6} M. caused 50% inhibition of the glyoxalase activity of intact human and rabbit erythrocytes. Somewhat higher concentrations were necessary to give the same inhibition in haemolysates. Phenothiazine, and to a lesser extent, phenothiazine sulphoxide also inhibited glyoxalase activity. In contrast to typical inhibitors affecting sulphhydryl groups in the enzyme, phenothiazine inhibited in the presence of glutathione. There was no consistent relationship between methaemoglobin formation and enzyme inhibition with the different compounds. W.P.R.

190—Canadian Journal of Public Health.

- a. BOURNS, T. K. R., 1953.—“Trichinosis in the Vancouver area. Examination of 400 human diaphragms.” **44** (4), 134–136.

(190a) *Trichinella spiralis* cysts were recovered from 16 out of 400 diaphragm samples from autopsies at three hospitals in Vancouver. The tissues were examined by direct compression and digestion techniques. Fourteen of the 16 positives contained less than 50 cysts per gram of muscle. As most of the inter-city travel is directed across the international boundary with the U.S.A., it is suggested that some of these cases may have been acquired in the U.S.A. by Canadian visitors. R.T.L.

191—Canadian Journal of Zoology.

- a. WU, L.-Y., 1953.—“A study of the life history of *Trichobilharzia cameroni* sp.nov. (family Schistosomatidae).” **31** (4), 351–373.
 b. WOLFGANG, R. W., 1953.—“Studies on the endoparasitic fauna of Trinidad mammals. IX. *Didelphonema*, a new genus of nematode from marsupials.” **31** (5), 519–521.
 c. WU, L.-Y., 1953.—“On the life history and biology of *Notocotylus stagnicolae* Herber, 1942 (family Notocotylidae).” **31** (5), 522–527.

(191a) An outbreak of swimmer's itch in the lower Ottawa River near Montreal, was caused by *Trichobilharzia cameroni* n.sp. Its life-cycle was completed experimentally in laboratory-bred *Physa gyrina*, of which naturally infected specimens were collected from the river, and in canaries, pigeons and young ducks. Each stage is described and figured in detail. Development in the snail takes 28 to 35 days. The adults become mature in 12 to 14 days. The differences between *T. cameroni*, *T. physellae* and *Pseudobilharziella querquedulae* are tabulated. In *T. cameroni* the males are only slightly longer than the females and the caeca unite at the level of the prostate gland in the male and of the tubular seminal receptacle in the female. It is suggested that migratory birds were the source of infection. R.T.L.

(191b) *Spirocerca cylicola*, described by Wolfgang (1951) from *Didelphis marsupialis insularis* from Trinidad, has been found to be identical with *S. longispiculata* Hill, 1939. This species differs from other members of the genus *Spirocerca* in the following characters: definite pseudolabia are present, there are recognizable dorsodorsal and ventroventral papillae,

long, slender mesostome is cyclindrical, not hexagonal and the vulva is near the middle of the body. On these grounds, *S. longispiculata* is placed in a separate genus named *idelphonema* n.g. R.T.L.

(191c) The adult, cercaria and metacercaria of *Notocotylus stagnicolae* are redescribed and figured from *Stagnicola palustris* collected from the Ottawa River. Attempts to infect mice and hamsters were unsuccessful. The adult parasites found in experimentally infected chickens were few in number. As the caeca of these worms were filled with red blood corpuscles, it would appear that they feed on the host's tissues rather than on the caecal contents. R.T.L.

92—Cellule.

- a. YOSUFZAI, H. K., 1953.—“Cytological studies on the oogenesis of *Fasciola hepatica* L.” 55 (2), 165–176.
- b. YOSUFZAI, H. K., 1953.—“Fertilisation in *Fasciola hepatica* L.” 55 (2), 177–184.

(192a) Yosufzai describes the extrusion of nuclear material into the cytoplasm of the oogonia in *Fasciola hepatica*. Nucleoli appear in very early oocytes and as the oocytes grow nucleolar material and even entire nucleoli pass out through the nuclear membrane and lie in the cytoplasm. Golgi elements and mitochondria are present in oogonia and oocytes. S.W.

(192b) In *Fasciola hepatica* fertilization of the ovum takes place in the distal part of the uterus. Spermatozoa which penetrate the shell but fail to enter the oocyte frequently enter reticulate cells where they degenerate. Only the head and the middle piece of the spermatozoon enters the cytoplasm of the oocyte, the tail breaking off and remaining on the surface. The first maturation division takes place before the spermatozoon penetrates, the second afterwards. A second polar body is formed. A male pronucleus is formed and fusion of the two pronuclei takes place in the centre of the ovum. S.W.

93—Chinese Medical Journal. Peking.

- a. FU, H. H. & MA, K. C., 1953.—“Chloroquin in the treatment of clonorchiasis sinensis.” 71 (2), 135–138.

(193a) In a chronic case of *Clonorchis sinensis* infection treated about 20 years previously with gentian violet, a 50 days' course consisting of one “Iroquin” tablet twice daily (each tablet containing 0.2 gm. of chloroquine diphosphate, equivalent to 0.15 gm. of chloroquine base) resulted in the disappearance of *Clonorchis* eggs from the faeces which were still negative even months later. Negative results were also obtained from a duodenal drainage and three bile examinations. Although the faeces became negative after 10 gm. of the drug had been given, it is emphasized that treatment should not be terminated at this stage. Side effects, though not considered serious, included loss of weight, insomnia and general weakness. The authors believe that chloroquine is probably superior to other therapeutic agents previously used for this infection. P.M.B.

94—Chronicle of the World Health Organization.

- a. ANON., 1953.—“Bilharziasis.” 7 (9), 244–245.

(194a) [A fuller account of this paper appears in *World Hlth Org. techn. Rep. Ser.*, 1953, No. 65, 45 pp. For abstract see No. 278a below.]

95—Citrus Leaves.

- a. SUIT, R. F. & DuCHARME, E. P., 1953.—“The burrowing nematode and other parasitic nematodes in relation to spreading decline.” 33 (7), 8–9, 32–33.

(195a) [This paper is practically the same as that by the same authors in *Calif. Citrogr.*, 1953, 38, 307, 319–322. For abstract see No. 187a above.]

196—Cleveland Clinic Quarterly.

- a. KING, J. W., 1953.—“The importance of fecal examination in the diagnosis of strongyloidiasis.” 20 (2), 359–363.

(196a) King tabulates the signs and symptoms in 35 patients at the Cleveland clinic believed to be due to *Strongyloides stercoralis* infection although a history of gastro-intestinal distress is so common that it offers little help in establishing a diagnosis. The need for routine faeces examination of such patients is emphasized.

197—Comptes Rendus des Séances de l'Académie des Sciences. Paris.

- a. COUTURIER, A., 1953.—“Mode de formation d'un kyste simple chez *Tunicamermelolonthinarum* Cout. Nématode parasite des larves de Melolonthinae (Coléoptères).” 236 (11), 1201–1203.

198—Cornell Veterinarian.

- a. KRULL, W. H. & MAPES, C. R., 1953.—“Studies on the biology of *Dicrocoelium dendriticum* (Rudolphi, 1819) Looss, 1899 (Trematoda: Dicrocoeliidae), including its relation to the intermediate host, *Cionella lubrica* (Müller). VIII. The cottontail rabbit, *Sylvilagus floridanus mearnsi*, as a definitive host.” 43 (2), 199–202.

(198a) Continuing their work on *Dicrocoelium dendriticum* in the U.S.A., Krull & Mapes find that the cotton-tail rabbit (*Sylvilagus floridanus mearnsi*) can act as a natural definitive host. Although very few cotton-tails were present on the infected pasture where most of the work has been carried out, ten were trapped during July and August 1952 and two of them were infected. One cotton-tail was experimentally infected by feeding it with 1,600 an-

199—Dokladi Akademii Nauk SSSR.

- a. LOGACHEV, E. D., 1953.—[The origin and tissue character of the cuticular formations in cestodes.] 89 (5), 965–967. [In Russian.]
 b. NEVOSTRUEVA, L. S., 1953.—[Study on the life-cycle of *Echinostoma miyagawai* (Ishikawa, 1932)—a factor of echinostomiasis of fowl.] 90 (2), 317–318. [In Russian.]
 c. SHPOLYANSKAYA, A. Y., 1953.—[Influence of *Ligula* on changes occurring in leucocytes in the blood of fishes.] 90 (2), 319–320. [In Russian.]

(199a) From his cytological study of the origin and structure of uterus epithelium in *Diphyllobothrium latum* Logachev comes to the conclusion that this epithelium seems to originate from non-nucleated parenchyma material.

(199b) By feeding *Limnaea ovata* and *L. auricularia* naturally infected with echinostomiasis metacercariae to chickens, Nevostrueva obtained adult *Echinostoma miyagawai* 12 and 24 days later. She gives a detailed description of the egg and its development. At 24°C.–25°C. miracidia hatch after nine to eleven days.

(199c) Shpolyanskaya studied the pathogenic role of *Ligula* in 124 specimens of *Carassius carassius*. She found that in infested fish the haemoglobin content varied from 18% to 35.2%; the polymorph leucocytes increased to 25% and monocytes to 11.5% whereas in uninfested fish they were 40%, 12%, 3% and 4% respectively. In her opinion an examination of the blood would be of value in the diagnosis of *Ligula* in fish.

200—FAO Plant Protection Bulletin. Rome.

- a. MILLER, P. R., 1953.—“Lowland rice culture as an economic control of *Sclerotinia* and root-knot nematodes.” 1 (12), 183–187.
 b. ANON., 1953.—“Major pests and diseases in Western Europe and Mediterranean region in 1952.” 1 (12), 191–192.

(200a) Lowland rice is a valuable cash crop which, grown in rotation with vegetable crops, offers good prospects of control of *Meloidogyne*. That the nematode population can be

duced considerably by the flooding for rice culture in as short a period as two months is shown by contrasting the results obtained from two plot experiments, one on lowland paddy (flooded), the other on upland paddy (not flooded). Before the practice can be recommended to growers, the effect of stagnant pools which might be established if large fields were flooded needs study.

R.T.L.

(200b) Member governments of the European Plant Protection Organisation have reported on the occurrence of *Heterodera rostochiensis* in western European countries during 1952. In Spain the infection was observed for the first time. It occurred in the provinces of Barcelona and Valencia and on the island of Majorca where imported seed had been grown. It was also reported for the first time from the Saar. In Belgium the infection is limited to an area about 1 km. deep extending for 25 km. along the coast. In France, it is still mainly confined to the regions of Dunkirk and Triel. In Austria it is still restricted to Salzburg, Styria and the Tyrol. In the German Federal Republic 2.5% of 30,000 samples contained cysts. In Sweden 281 localities were known to be infested, including 21 outbreaks described in 1952. The main centres were in the coastal provinces of Skane, Blekinge and Halland where potato growing is intensive. In Finland four outbreaks were reported from the south-western part of the country. In Denmark only 0.2% of 35,000 soil samples from fields planted with certified seed were infested. In the Netherlands there was some spread of the infection around existing centres in the provinces of Overijssel and near industrial areas. In the United Kingdom, *H. rostochiensis* was present in most parts of England and Wales and was found in eastern Scotland where 118 of 2,823 samples of soil from fields with high grade seed crops contained cysts. In Northern Ireland 3% of the area surveyed in 1952 was found infested. In the Republic of Ireland the pest had been found only in a small number of isolated holdings and gardens. In Jersey the main areas of infestation remained on the south coast and in the extreme north-west.

R.T.L.

201—Farmers' Bulletin. U.S. Department of Agriculture.

- a. HALL, W. J. & WEHR, E. E., 1953.—“Diseases and parasites of poultry.” No. 1652, 91 pp. [Revised.]

202—Farmers Weekly. London.

- a. GREEN, T. C., 1953.—“The problem of husk.” 38 (21), 60–61.

203—Florida Grower.

- *a. COOPER, J. F., 1953.—“Burrowing nematode in citrus.” 61 (7), 16, 22.

204—Gazeta Médica Portuguesa.

- a. CRUZ FERREIRA, F. S. DA & ALMEIDA, C. L. DE, 1953.—“Contribuição para o estudo da ancilostomíase na Guiné Portuguesa. II.—Aspectos clínico-terapêuticos.” 6 (1), 153–166. [English & French summaries pp. 164–165.]
- b. FRAGA DE AZEVEDO, J., 1953.—“O problema da bilharziose humana.” 6 (1), 167–186. [English & French summaries pp. 185–186.]

(204a) The symptoms associated with hookworm infection in 170 patients are described. 51 were treated with carbon tetrachloride and 11 with tetrachlorethylene. The faeces of 31 were negative for hookworm ova after the first treatment; these were regarded as cured. Of the rest six more were negative after the second treatment and a further seven after the third. Haemoglobin ranged from 16% to 98%, the red blood corpuscles from 1,100,000 to 5,870,000, the eosinophilia from 1.2% to 34%. Other helminths present were *Taenia saginata* in four patients, *Strongyloides* in three, *Schistosoma haematobium* in one, *Enterobius* and *Trichuris* in six.

R.T.L.

(204b) In Mozambique, the incidence of vesical schistosomiasis in the province of Manhica ranged from 26% to 96% in different villages but *Schistosoma mansoni* infections

were more restricted in distribution, eggs being present in the faeces of only 30%-40%. Two maps indicate the distribution of intermediate hosts and of *Schistosoma haematobium* in the Manhica region and there are five photographs of drainage canals.

205—Gloxinian.

- *a. NOKER, A., 1953.—“Nematodes in a greenhouse.” 2 (5), 12-13.

206—Groenten en Fruit.

- *a. BRUINSMA, F., 1953.—[Control of nematodes on shallots.] 8, 577, 579. [In Dutch.]

207—Harefuah.

- a. ETTINGER-TULCZYNSKA, R., 1953.—[Intestinal parasites in the Rehovot district before and after Arab evacuation.] 44 (3), 59-61. [In Hebrew: English & French summaries p. 61.]

(207a) Results are given of faeces examinations in the Rehovot district during the years 1946 to 1952, comprising two years before and two years after the establishment of Israeli independence. Between these periods a mass exodus of Arab population caused a radical change of ethnic components. In 1946 *Ancylostoma* was found in 66% of Arabs and in 0% of Jews, *Ascaris* in 10% and 2.3%, *Trichuris* in 7% and 1.4%, *Strongyloides* in 1.7% and 0%, *Hymenolepis nana* in 1.7% and 0.8%, and *Taenia saginata* in 0% and 1.4% respectively. Since the establishment of the State only the Jewish population has been examined. In 1952 *Ancylostoma* was found in 0.6%, *Ascaris* in 0.5%, *Trichuris* in 0.4%, *Strongyloides* in 0.1%, *Hymenolepis nana* in 0.8% and *Taenia saginata* in 0.2%.

208—Hawaii Farm Science.

- *a. GILBERT, J. C. & MCGUIRE, D. C., 1953.—“New tomatoes are gall-resistant.” 1 (4), 2, 3.
*b. SHER, S. A., KAMASAKI, H. & MURAKISHI, H., 1953.—“Intensive spray control of nematode.” 2 (1), 2, 6.

209—Höfchen-Briefe für Wissenschaft und Praxis.

- a. HIRSCHMANN, H., 1953.—“‘Systox’ zur Bekämpfung von Blattälchen.” 6 (2), 1-24. [Also in English edition.]

(209a) Hirschmann gives the results of extensive tests of Systox against *Aphelenchoides fragariae* and *A. ritsema-bosi* and compares its efficacy with that of E605f. Systox kills more quickly at similar concentrations: at room temperature *A. fragariae* is killed in 4-14 days at concentrations of 0.05-0.0001%, and *A. ritsema-bosi* in 11-19 days at 0.05-0.005%. With short-period applications of Systox killing of both species takes longer than with similar applications of E605f. Nematodes subjected to a second application of Systox 5 days after a short-period application succumb rapidly, especially *A. fragariae*. The stem eelworm, *Ditylenchus dipsaci*, and the free-living *Diplogaster maupasi* react similarly in Systox to leaf eelworms. *Ditylenchus dipsaci* requires 30 days at 0.05% concentration of Systox for complete kill and *Diplogaster maupasi* 1-5 hours at 0.05-0.017%. For complete destruction of leaf eelworms in ferns and chrysanthemums Hirschmann recommends 4-6 sprayings with 0.05-0.1% Systox at intervals of 3-4 days: this gives 3-4 weeks' immunity from the parasites.

M.T.F.

210—Hospital. Revista Médica de Santander.

- a. AGUILÓ, F. DE S., 1953.—“Una nueva helmintiasis humana en Colombia: la fascioliasis hepática.” Año XIV, 3 (21/22), 105-107.

(210a) [This paper is reprinted from *Rev. Acad. colomb.*, 1953, 9, 133-134. For abstract see *Helm. Abs.*, 22, No. 135a.]

11—Irish Veterinary Journal.

- a. DROMEY, L., 1953.—“Ascariasis in cattle.” 7 (3), 55-56.

(211a) Dromey reports the finding of several *Ascaris lumbricoides*, ranging from 9 cm. to 13 cm. in length, during a post-mortem on a shorthorn calf three months old, on a farm at Clonmel. A fair number of *Ascaris* ova were present in the faeces. No pigs had been kept on the farm. R.T.L.

12—Italia Agricola.

- a. GOIDANICH, G., FOSCHI, S. & GIULIANELLI, E., 1953.—“Le famigerate anguillule e la possibilità di combatterle.” 90 (4), 257-259.

13—Izvestiya Akademii Nauk SSSR. Seriya Biologicheskaya.

- a. MAKAROV, P. V., 1953.—[Cytology of fertilization in *Parascaris equorum*.] Year 1953, No. 1, pp. 46-58. [In Russian.]

14—Japanese Journal of Medical Science and Biology.

- a. YASURAOKA, K., 1953.—“Ecology of the miracidium. I. On the perpendicular distribution and rheotaxis of the miracidium of *Fasciola hepatica* in water.” 6 (1), 1-10.
 b. RITCHIE, L. S., HUNTER, III, G. W., PAN, C., YOKOGAWA, M., NAGANO, K. & SZEWCZAK, J. T., 1953.—“Parasitological studies in the Far East. VIII. An epidemiologic survey of the Tone River area, Japan.” 6 (1), 33-43.
 c. HUNTER, III, G. W., RITCHIE, L. S., PAN, C., YOKOGAWA, M. & ALTAMIRANO, 1953.—“Parasitological studies in the Far East. IX. An epidemiologic survey of Shikoku Island, Japan.” 6 (1), 45-55.

(214a) Yasuraoka has shown that in the dark miracidia of *Fasciola hepatica* remain in the surface layers of water for about three hours after hatching but that their perpendicular distribution subsequently becomes more uniform. They die about 16 hours after hatching. When illuminated from above most of the miracidia remain in the upper layers of water for about 16 hours, after which they become moribund and sink. In a very slow water current (about 1.5 mm. per sec.) the miracidia swim against the current in a zig-zag fashion. S.W.

(214b) The following information is supplementary to that which appeared in an authors' abstract in *J. Parasit.*, 1951, 37, Suppl. p. 17 [for abstract see *Helm. Abs.* 20 No. 451 l]. Details of the helminth infections found in each of the prefectures of Chiba, Ibaraki and Saitama in the Tone River area of Japan are tabulated. Over the whole area the intensity of infections, assessed on the basis of egg counts per microscopic preparation (obtained by concentration techniques) and termed the “parasitic density index”, was 147 for ascaris, 40 for whipworm and 59 for hookworm. The relatively low endemicity of schistosomiasis japonica along the Tone River is probably due to the limitation of snails to the marsh areas between the levees and the river itself. P.M.B.

(214c) The following information is supplementary to that which appeared in an authors' abstract in *J. Parasit.*, 1951, 37, Suppl. p. 17 [for abstract see *Helm. Abs.* 20, No. 451m]. From Shikoku Island, Japan, are recorded three cases with *Hymenolepis nana*, one with *H. diminuta*, three with *Taenia* sp., two with *Echinocasmus perfoliatus*, two with *Capillaria* sp. and 56 with heterophyid infections. The incidence of *Enterobius* was unusually high, with a maximum of 73.6% in Tokushima. In Ehime prefecture *Paragonimus westermani* was diagnosed in 25 out of 83 persons whose faeces and sputum were specially examined for this infection. Out of 109 *Potamon dehaani* examined in seven communities 45 were infected with metacercariae of *Paragonimus westermani*; the highest rate occurred at Yoshinobu in Ehime prefecture where 36 out of 37 of the crabs were positive. The incidence of each helminth species found in 16 communities in the four prefectures [including those recorded in the abstract referred to above] is tabulated and the “parasitic density index” (P.D.I.) [see preceding abstract] for *Ascaris*, whipworm and hookworm in each prefecture is compared.

The P.D.I.s for the whole area were 220 for *Ascaris* and 102 for whipworm which are considerably higher than those recorded in other current surveys in Japan, and 73 for hookworm which is relatively low. It is calculated that 15% of all *Ascaris* infections were severe. P.M.

215—Journal of the American Veterinary Medical Association.

- a. GRUNDMANN, A. W., BUTLER, J. M. & SELIN, M. J., 1953.—“Examination of commercial silver fox as a possible host for *Echinococcus granulosus* (Batsch, 1786) Rudolphi in Salt Lake County, Utah.” 123 (918), 235-236.
- b. ENZIE, F. D. & WHITMORE, G. E., 1953.—“Photosensitization keratitis in young goats following treatment with phenothiazine.” 123 (918), 237-238.
- c. TALMAGE, R. V., TRUM, B. F., MONROE, R. A. & RUST, J. H., 1953.—“The effect of phenothiazine N.F. (green) and phenothiazine N.F. purified on the uptake of I^{131} by the thyroid of the burro. A preliminary report.” 123 (919), 328-329.

(215a) No evidence of *Echinococcus granulosus* was found either in the faeces of 37 silver foxes or in the intestine of 83 in northern Utah. *Toxocara canis* was found in the intestine in six and ascarid ova, presumably *T. canis*, in two faecal samples. P.M.

(215b) Within two days of treatment with phenothiazine, 15 out of 28 kids aged from 3 to 10 weeks showed slight to severe symptoms of photosensitization, as a result of being turned out in bright sunlight about 18 hours after treatment. After being kept out of the sunlight for a few days the lesions disappeared and all animals were normal a week after treatment. About 60 adult goats receiving phenothiazine were unaffected. This is the first report of the reaction to phenothiazine in goats. P.M.

(215c) Experiments are briefly reported which indicate that the anti-thyroid effect of phenothiazine is confined to the impurities and, depending on the methods of preparation, may in the green form, be completely absent or may be present in sufficient quantity to cause almost complete inhibition of I^{131} uptake by the thyroid. Phenothiazine N.F. (green) may contain approximately 0.3% organically bound iodide. As it may produce hypothyroidism it is less attractive as an anthelmintic than phenothiazine N.F. (purified). R.T.

216—Journal of Bone and Joint Surgery.

- a. GARCÍA CAPURRO, R. & PEDEMONTE, P. V., 1953.—“Hydatid cysts of the femur. Total removal of the femur and replacement by a complete cadaveric femur.” 35-B (1), 84-88.

217—Journal of Comparative Pathology and Therapeutics.

- a. SOLIMAN, K. N., 1953.—“Migration route of *Dictyocaulus viviparus* and *D. filaria* infective larvae to the lungs.” 63 (2), 75-84.

(217a) In experiments to trace the route of migration of *Dictyocaulus viviparus* to the lungs, no evidence of infection was found in 26 fetuses from cows with parasitic bronchitis in two newly-born bull calves from infected cows or in 60 samples of faeces from 10 heifer calves whose dams were infected. There were no larvae in the liver of 17 animals aged from one month to three-and-a-half years but in the mesenteric lymph glands, examined by press preparations and by Baermann extraction, there were exsheathed third-stage active larvae in seven cases and a few sheathed dead larvae in three others, suggesting that the active larvae had passed on to the lungs, leaving a few dead sheathed ones in the mesenteric glands. These findings point to the mesenteric lymphatics as the route of the larvae to the lungs. Experimental infections with *D. filaria* in rabbits indicated that during the first 48 hours after infection the larvae pass through the lymphatic glands, arriving in the lungs between the second and fifth days. Of seven guinea-pigs each receiving 7,000 infective third-stage *D. filaria* larvae and autopsied respectively at 24 hours, 3, 7, 15, 20, 22 and 24 days later, one guinea-pig had two female fourth-stage larvae in the liver, confirming Kauzal's view that larvae may pass accidentally to the portal circulation; the remaining livers were unaffected. Larvae were present in the mesenteric lymph nodes of the first three autopsied but not in the other four.

Active third-stage larvae were observed in the lungs at three days, fourth-stage larvae with the sexes clearly differentiated were present at seven days, fifth-stage larvae at 15 days and young adults from the 20th day. At 22 days the vulvar opening was clearly visible in the females and spicules of normal size were present in the males. Similar results were obtained in mice. Respiratory symptoms and pneumonic lesions similar to those observed in cattle with parasitic pneumonia were exhibited in guinea-pigs on the 14th day. The course of *D. viviparus* infections in rabbits, guinea-pigs and mice resembled that observed in *D. filaria* infections, except that the pneumonia and congestion were of less extent and there were no apparent symptoms; this may, however, have been due to supplementation of the diet with vitamin A in kale.

P.M.B.

218—Journal of the Indian Medical Association.

- a. AUGUSTINE, D. L., 1953.—“Filariasis in tropical Asia.” 22 (8), 317–323.

219—Journal of the International College of Surgeons.

- a. LEHMANN, E. & SCHAPIRA, J., 1953.—“Retroperitoneal echinococcus cyst producing ‘Goldblatt kidney’.” 19 (2), 146–152. [French, German, Italian, Spanish & Portuguese summaries pp. 151–152.]

220—Journal of the Land Agents’ Society.

- a. RONEY-DOUGAL, R. P., 1953.—“Eelworm.” 52 (5), 186–187. [Comment by E. H. Mostyn pp. 187–188.]

221—Journal of Morphology.

- a. KRUIDENIER, F. J., 1953.—“Studies on mucoid secretion and function in the cercaria of *Paragonimus kellicotti* Ward (Trematoda: Troglotrematidae).” 92 (3), 531–543.

(221a) Kruidenier, from his studies on both living and fixed material of all developmental stages of the cercariae of *Paragonimus kellicotti*, concludes that the “ventral cells” are mucoid-secreting glands homologous but not identical with the mucoid glands already described in other cercariae. The centres of mucoid secretion are all developed while the cercaria is within the redia; morphological adaptations providing for the efficient storage of mucoids are described and figured. The mucoids protect the cercariae against changes in environment and aid in attaching them to the second intermediary or to vegetation.

S.W.

222—Journal of Parasitology.

- †a. ADAMS, J. R. & BENDELL, J. F., 1953.—“A high incidence of blood parasites in a population of sooty grouse.” 39 (4, Sect. 2), Suppl. p. 11.
†b. SILLMAN, E. I., 1953.—“The life history of *Azygia longa* (Leidy, 1851) (Trematoda: Azygiidae).” 39 (4, Sect. 2), Suppl. p. 15.

(222a) Of 252 adult sooty grouse (*Dendragapus obscurus*) examined in Vancouver Island, British Columbia, 82% had microfilariae in their blood.

R.T.L.

(222b) *Azygia longa* occurs as a natural infection in *Esox vermiculatus* and *Amia calva* in the vicinity of Ann Arbor, Michigan. Uterine eggs contain mature miracidia. When the eggs were fed to *Ammicola limosa* fully-developed rediae were produced in 21 days. Cystocercous cercariae emerged 42 days after infection and developed into egg-bearing worms 20 to 30 days after feeding to *E. vermiculatus*.

R.T.L.

Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †c. HUGGHINS, E. J., 1953.—"Life history of a strigeid trematode, *Hysteromorpha triloba* (Rudolphi, 1819) Lutz, 1931." 39 (4, Sect. 2), Suppl. pp. 15–16.
- †d. ETGES, F. J., 1953.—"Studies on the life histories of *Maritrema obstipum* (Van Cleave and Mueller, 1932) and *Levinseniella* sp. (Trematoda: Microphallidae)." 39 (4, Sect. 2), Suppl. p. 17.
- †e. KRUIDENIER, F. J., 1953.—"Studies on the encystation of larval digenetic trematodes." 39 (4, Sect. 2), Suppl. p. 16.
- †f. KAGAN, I. G., 1953.—"Experimental infections of rhesus monkeys with *Schistosomatum douthitti* (Cort)." 39 (4, Sect. 2), Suppl. pp. 16–17.
- †g. WOODHEAD, A. E., 1953.—"Bisexual reproduction in the mother sporocyst of *Paragonimus kellicotti* (Trematoda)." 39 (4, Sect. 2), Suppl. p. 17.

(222c) Natural infection with *Hysteromorpha triloba* was present in birds from a rookery of *Phalacrocorax a. auritus* at Spring Lake, near Savanna, Illinois. The flesh of black bullheads, *Ameiurus melas*, from the lake was riddled with strigeid metacercariae. When infected fish were fed to nestlings, the intestines were almost occluded with thousands of *H. triloba*. Hughhins has followed the complete life-cycle in the laboratory and has shown that Lutz's work is totally erroneous. In *Gyraulus hirsutus* the miracidia develop into cercariae in 15 days at high summer temperatures. The metacercariae form and attain full development in about 12 weeks in *A. melas* and *Hyborhynchus notatus* but not in *Lebistes*. Three days after infection of the cormorants, the worms begin to lay eggs.

R.T.L.

(222d) The cercariae of *Maritrema obstipum* and *Levinseniella* sp. are emitted by *Amnicola pilsbryi*. They encyst in *Astellus communis* and become sexually mature in various experimentally infected birds and mammals. The suppression of *Maritrematidae* by Cable & Kuns (1951) is supported. *Pseudospelotrema* is a synonym of *Maritrema*. *P. japonicum*, *P. uriae*, *P. cineli*, *P. obstipum* and *P. medium* are species of *Maritrema* but *P. nettae* and *P. amnospizae* are placed in the restored genus *Maritreminoides*. *Gynaecotyla* is suppressed as a synonym of *Microphalloides* to which *G. adunca*, *G. jägerskiöldi*, *G. similimus*, *G. squatoralae* and *G. nassicola* are transferred.

R.T.L.

(222e) Cercariae which encyst on general or specific, animate or inanimate, objects furnish the entire complex of encapsulating materials. Studies on *Fasciola hepatica* cercariae confirm that certain cystogenous materials which form the outer cyst wall of the metacercariae are secreted and discharged by cercariae and after maturing in the rediae, form a loosely coherent, cuticula-like cyst wall, surrounding the free-swimming cercariae except over the suckers. As a similar occurrence has been observed in some other species, it is not considered exceptional.

R.T.L.

(222f) Rhesus monkeys developed a schistosome dermatitis when exposed to the cercariae of *Schistosomatum douthitti*. The rash disappeared in five to seven days. Young and sexually mature males and females and dead or dying worms were recovered from the liver and intestinal veins 10–25 days after infection with 2,500–45,000 cercariae. The presence of dead worms suggests that resistance may begin as early as the second week after exposure. No worms were recovered from five monkeys exposed to 6,000–10,000 cercariae when necropsied 30–96 days later. This suggests that the infection is completely terminated in three to four weeks. Monkeys are resistant to a second exposure to *S. douthitti* cercariae, but a previous exposure to *S. douthitti* did not protect against *Schistosoma mansoni* cercariae. In resistant animals the cercariae did not reach the lungs.

R.T.L.

(222g) In *Paragonimus kellicotti*, the mother sporocyst is a hermaphroditic adult and the generation is a true generation, for reduction occurs in both the male and female germ cells. The spermatids metamorphose into small oval cells with condensed nucleoli and little protoplasm. There are four-parted tetrads at the metaphase of the primary spermatocyte. When the stalked oögonium detaches from the germinal tissue, the nucleus divides and the

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- th. McMULLEN, D. B., HUBENDICK, B., PESIGAN, T. P. & BIERSTEIN, P., 1953.—“Observations made by the World Health Organization Schistosomiasis Team in the Philippines.” 39 (4, Sect. 2), Suppl. p. 17.
- ti. LUTTERMOSER, G. W., 1953.—“Nocturnal emergence of *Schistosoma mansoni* cercariae from *Australorbis glabratus* by inversion of light cycle and practical application.” 39 (4, Sect. 2), Suppl. pp. 17–18.
- ti. DEWITT, W. B., 1953.—“Pulmonary manifestations of single sex *Schistosoma mansoni* infections in mice.” 39 (4, Sect. 2), Suppl. p. 18.
- tk. STIREWALT, M. A., 1953.—“Penetration of definitive host skin by cercariae of *Schistosoma mansoni*.” 39 (4, Sect. 2), Suppl. p. 18.
- tl. THOMPSON, JR., J. H., 1953.—“Host-parasite relationships of *Schistosoma mansoni*.” 39 (4, Sect. 2), Suppl. p. 18.

micromere becomes a cap-cell. A sperm cell is taken in, making a cluster of three cells. The cap-cell divides to form a cellular cover to which the oöcyte and sperm cell attach. When 6–8 cells are present, the round sperm cell is detached. The primary oöcyt forms a metaphase plate and sets off polar body number one. This divides into polar bodies two and three. Polar body number two is set off and also becomes a nurse cell. When 40–80 nurse cells have been formed and the mass becomes oval, the male and female chromosomes meet on a spindle and embryological development of the mother redia begins. R.T.L.

(222h) In the Philippines, schistosomiasis japonica is a rural disease in 12 endemic areas with from 100,000 to 200,000 cases. The most important are Eastern Leyte, Panguil Bay and Compostela. The use of molluscicides is impracticable. *Oncomelania quadrasi* was found in streams in virgin forests. When these are cleared for farming, the snails are left undisturbed. The relationship of human disease and rice farming is apparently a comparatively recent development. R.T.L.

(222i) When isolated *Australorbis glabratus* were kept in beakers at 30°C. and the light cycle was from 9 p.m. to 9 a.m., the pattern of emergence of cercariae of *Schistosoma mansoni* was nocturnal, whereas it was diurnal when the light cycle was from 9 a.m. to 9 p.m. As the common practice of placing snails in light at 9 a.m. for harvesting cercariae at 2 p.m. was not convenient for exposing large numbers of animals on the same afternoon, fluorescent lamps were turned on by time switch at 3 a.m. and the temperature range of 30°C.–32°C. was maintained. The cercariae harvested at 9 a.m. proved as infective as those obtained by the usual procedure. R.T.L.

(222j) Mice, infected with male cercariae of *Schistosoma mansoni* only, had large numbers of mature worms in the lungs. Some were walled off and were partially degenerated. Others were free and alive in the tissues. The lung damage was extensive. When female cercariae only were used, the lungs appeared practically normal and the female worms were very small and immature. When both male and female cercariae were used, no worms were recovered from the lungs. R.T.L.

(222k) Among the many factors which influence penetration of the unshaven, unbroken skin and mucous membrane of mice by *Schistosoma mansoni* cercariae are: age of mouse, previous recent invasion, type and temperature of the water containing the cercarial suspension, age of the cercariae and region of the skin penetrated. The number of cercariae which penetrated was not influenced by mouse strain or sex, cercarial sex or prophylaxis with immune serum. Whenever possible, the cercariae entered through breaks in the surface and especially by way of hair follicles. R.T.L.

(222l) Conclusions were drawn from an experimental investigation of the host resistance and susceptibility of laboratory animals to *Schistosoma mansoni*, of the behaviour of the parasite in different hosts and of the effect of removal of the spleen from a highly susceptible and a highly resistant host [but are not reported]. R.T.L.

+ Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †m. MELENEY, H. E. & MOORE, D. V., 1953.—“Observations on immunity to superinfection with *Schistosoma mansoni* and *S. haematobium* in monkeys.” 39 (4, Sect. 2), Suppl. p. 18.
- †n. ULMER, M. J., 1953.—“Studies on the nervous system of *Postharmostomum helices* (Leidy 1847) Robinson, 1949, (Trematoda: Brachylaematidae).” 39 (4, Sect. 2), Suppl. p. 19.
- †o. RADKE, M. G., HUNTER, III, G. W., MOON, A. P., POTTS, D. E. & WILLIAMS, J. S., 1953.—“Studies on schistosomiasis. IX. Studies on some ointments for protection against schistosomiasis mansoni.” 39 (4, Sect. 2), Suppl. p. 19.
- †p. GUMBLE, A., OTORI, Y., RITCHIE, L. S. & HUNTER, III, G. W., 1953.—“The influence of pH, temperature and light on the emergence of the cercariae of *Schistosoma japonicum* from *Oncomelania nosophora*.” 39 (4, Sect. 2), Suppl. p. 19.
- †q. PENNER, L. R., 1953.—“The biology of a marine dermatitis-producing schistosome cercaria from *Batillaria minima* (Gmelin).” 39 (4, Sect. 2), Suppl. pp. 19–20.

(222m) A *Pithecus mordax* was exposed repeatedly to bisexual infections of *Schistosoma mansoni*. When the passage of eggs ceased there was complete immunity to repeated reinfections, although cercarial penetration was demonstrated. A *Macaca mulatta* was exposed and re-exposed to bisexual infection of *S. haematobium* and then to bisexual infection of *S. mansoni*. Following active infection with *S. haematobium*, egg passage ceased and there was complete immunity to one reinfection with *S. haematobium*, but to subsequent infection with *S. mansoni*, there was a lack of complete immunity. A second *M. mulatta* was exposed to female cercariae and later to male cercariae of *S. mansoni*, and a third *M. mulatta* was exposed to male cercariae and later to female cercariae of *S. mansoni*. In both cases, infection with cercariae of one sex did not prevent those of the other sex from developing to maturity within the normal period.

R.T.L.

(222n) Sections of young adult *Postharmostomum helices* treated by modified gold chloride impregnation techniques showed, in addition to the major nerve trunks, the presence of additional commissures, especially in the pharyngeal region. There were also well developed, transverse, pre-acetabular commissures.

R.T.L.

(222o) A number of chemicals incorporated in olive oil and petrolatum were tested as potential protective ointments on the shaven backs of mice exposed for 30 minutes to 100 *Schistosoma mansoni* cercariae. An ointment made with an emulsion of 5% aqueous *n*-butylacetanilide was the only one which gave complete protection.

R.T.L.

(222p) The cercariae of *Schistosoma japonicum* emerged freely from naturally infected *Oncomelania nosophora* when the water was buffered for pH between 6.8 and 7.6 but at 6.0 and 8.0 there was evidence of suppression. Emergence was not affected by temperatures of 12°C.–28°C., but there was distortion of the cercariae at higher temperatures and suppression of shedding at 8°C. or lower. Emergence was greatly reduced by the absence of light. Over a period of eleven days, snails in darkness shed only approximately one third as many cercariae as the controls. When transferred to light, the numbers shed equalled those of the controls.

R.T.L.

(222q) A schistosome dermatitis similar to that of naturally acquired cases of “Gulf Coast itch” was experimentally produced with a schistosome cercaria discharged by the black horn shell, *Batillaria minima* collected off Longboat Key, between Bradenton and Sarasota, Florida. Chickens exposed to infection were negative but two out of three pigeons became infected. The adult worms obtained experimentally resembled those collected from the portal system of the royal tern, *Thalasseus maximus*, from the same area, and are identified as *Ornithobilharzia canaliculata* (Rudolphi, 1819) Odhner, 1912.

R.T.L.

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †r. PENNER, L. R., 1953.—“The red-breasted merganser as a natural avian host of the causative agent of clam diggers' itch.” 39 (4, Sect. 2), Suppl. p. 20.
- †s. PENNER, L. R., 1953.—“Experimental infections of avian hosts with *Cercaria littoralinae* Penner, 1950.” 39 (4, Sect. 2), Suppl. p. 20.
- †t. VILLELLA, J. B., 1953.—“The life history of *Entosiphonus thompsoni* Sinitsin, 1931 (Trematoda: Brachylaematidae).” 39 (4, Sect. 2), Suppl. p. 20.
- †u. VILLELLA, J. B., 1953.—“The life history of *Ectosiphonus rhomboideus* Sinitsin, 1931 (Trematoda: Brachylaematidae) from the short-tailed shrew, *Blarina brevicauda*.” 39 (4, Sect. 2), Suppl. p. 21.
- †v. HOLLIMAN, R. B. & LEIGH, W. H., 1953.—“Life cycle of *Paramacroderoides echinus* Venard, 1941, a parasite of the Florida gar, *Lepisosteus platyrhincus*.” 39 (4, Sect. 2), Suppl. p. 21.
- †w. SILLMAN, E. I., 1953.—“Notes on the life history of *Opisthorchis tonkai* Wallace and Penner, 1939 (Trematoda: Opisthorchiidae).” 39 (4, Sect. 2), Suppl. p. 21.

(222r) The red-breasted merganser, *Mergus serrator*, is the natural definitive host of *Cercaria variglandis* of which *Nassa obsoleta* is the intermediate host. This cercaria is the causative agent of “clam diggers' itch”. Examination of the adults and of the type material of *Microbilharzia* has convinced Penner that *Microbilharzia* is a synonym of *Austrotilharzia* and that the name of this schistosome should be *A. variglandis* (Miller & Northrup, 1926).

R.T.L.

(222s) With *Cercaria littoralinae* obtained from *Littorina planaxis*, several species of birds, including the brandt cormorant and the western gull which are probably the best natural hosts in the San Diego region, were heavily infected experimentally and some died. Ducks were resistant. The adult worms belong to *Austrotilharzia* which has been emended to include the species of *Microbilharzia*.

R.T.L.

(222t) *Entosiphonus thompsoni* is common in the short-tailed shrew, *Blarina brevicauda*, near Ann Arbor, Michigan, and a few specimens were recovered from the white-footed mouse, *Peromyscus leucopus noveboracensis*. The land snail, *Retinella indentata*, was found to serve experimentally as first intermediate host. Cercariae developed to metacercariae in *Ventridens ligera*, *R. indentata*, *Deroceas laevis* and *Succinea ovalis*. Embryonated eggs appeared in the faeces 15 days after the metacercariae were fed to laboratory *Peromyscus*. Metacercariae were also collected from various species of land snails.

R.T.L.

(222u) The land snail *Ventridens ligera* (= *Gastrodonta ligera*) is a first intermediate host of *Ectosiphonus rhomboideus* parasitic in the short-tailed shrew, *Blarina brevicauda*, and the cercariae are discharged from daughter sporocysts 28–30 days after infection. These cercariae, which occur in the slime secreted by the snail, develop into metacercariae in the salivary glands, kidney and pedal sinus of *V. ligera* and other land snails. Hamsters were experimentally infected and gave rise to adults in 21 days. The worms, named *Brachylaima dolichodirus* by Mason (1953), are identical with *B. rhomboideus* (Sinitsin, 1931).

R.T.L.

(222v) The Florida gar, *Lepisosteus platyrhincus*, is a natural definitive host of *Paramacroderoides echinus*. The first intermediary is *Helisoma normalis duryi* and gives rise to xiphidiocercariae which encyst in small fishes, viz., *Gambusia affinis holbrooki*, *Jordanella floridae*, *Heterandria formosa*, *Mollienesia latipinna* and *Fundulus* sp., and in the frog *Rana sphenoccephala*.

R.T.L.

(222w) Opisthorchioid metacercariae were frequently found in centrarchid fish, chiefly *Lepomis gibbosus*, in the Huron River, and when fed to musk-rats, cats and white rats, developed into adult *Opisthorchis tonkai*. Seven weeks after embryonated eggs had been fed to laboratory-reared *Ammicola limosa*, pleurolophocercous cercariae emerged.

R.T.L.

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †x. SILLMAN, E. I., 1953.—“*Microtus pennsylvanicus pennsylvanicus*, a new final host for *Opisthorchis tonkai* Wallace and Penner, 1939 (Trematoda: Opisthorchiidae).” 39 (4, Sect. 2), Suppl. p. 22.
- †y. MILLER, J. H., 1953.—“Studies on the life history of *Posthodiplostomum minimum* (MacCallum, 1921).” 39 (4, Sect. 2), Suppl. p. 22.
- †z. NAJARIAN, H. H., 1953.—“The entrance of the cercaria of *Echinoparyphium flexum* (Linton, 1910, into tadpole kidneys.” 39 (4, Sect. 2), Suppl. p. 22.
- †ba. NAJARIAN, H. H., 1953.—“A partially-twinned daughter redia.” 39 (4, Sect. 2), Suppl. pp. 22–23.
- †bb. SMITH, R. J., 1953.—“An ancyliid snail, *Ferrissia novangliae*, a first intermediate host for trematodes.” 39 (4, Sect. 2), Suppl. p. 23.
- †bc. SADUN, E. H., 1953.—“*Fasciolopsis buski* (Lankester) in Central Thailand.” 39 (4, Sect. 2), Suppl. p. 23.
- †bd. SADUN, E. H. & CHARMNARNKITCH, C., 1953.—“Preliminary report on the treatment of opisthorchiasis with Aralen (chloroquine diphosphate) in Korat Province (northeast Thailand).” 39 (4, Sect. 2), Suppl. pp. 23–24.

(222x) *Opisthorchis tonkai* was found in four specimens of *Microtus p. pennsylvanicus* in the vicinity of Ann Arbor, Michigan. This appears to be the first record of an opisthorchid in voles. *O. tonkai* has been reported previously from musk-rats. R.T.L.

(222y) Longifurcate monostome cercariae shed by *Physa heterostropha* in the Botanical Gardens in New York developed into metacercariae in the sunfish *Lepomis gibbosus* and *L. megalotus*. These metacercariae which were identical with *Neascus vancleavei* became, when fed to one to four-day-old chicks, adult strigeids identical with the types of *Posthodiplostomum minimum*. The cercariae are differentiated from *Cercaria multicellulata* and *C. louisiana* both of which have been reported as the cercarial stage of *P. minimum*. R.T.L.

(222z) When the cercariae of *Echinoparyphium flexum* were placed with tadpoles of *Rana pipiens* in a small dish, they aggregated around the cloacal opening which they entered, migrated to the mesonephric ducts and on reaching the kidney tubules encysted. The cercariae also occurred in the gill chambers and in the coils of the gut but did not then encyst. R.T.L.

(222ba) A single daughter redia in which twinning began shortly behind the birth pore was found among normal rediae in a *Limnaea palustris* from which cercariae of *Echinoparyphium flexum* were emerging. R.T.L.

(222bb) *Ferrissia novangliae* collected from marsh ponds in south-eastern Michigan contained two kinds of furcocercous strigeid cercariae, xiphidiocercariae, furcocercous spirorchid cercariae, echinostome and amphistome cercariae. This is believed to be the first report of trematode infections in North American ancyliids. R.T.L.

(222bc) In three of the provinces in Central Thailand where water caltrops are cultivated in plantations, simple faecal smear examination of 208 persons gave evidence of infection with *Fasciolopsis buski* in 13%. The average egg count in 125 persons was 5,100 eggs per ml. by Stoll's technique. The faeces of the most severe case contained 88,000 eggs per ml. This patient vomited 29 flukes and passed six in her stools. At post-mortem, 466 flukes were collected. The lungs, spleen, kidneys and liver showed congestion and the liver cells were degenerated, with fat vacuoles in the cytoplasm. R.T.L.

(222bd) Fifteen soldiers infected with *Opisthorchis viverrini* each received 1 gm. of Aralen (chloroquine diphosphate) per day for three days, and 0.5 gm. per day for the 20 following days. Forty to 50 days after the treatment terminated, the faeces of three only out of the 12 cases examined were negative for eggs; seven had a lower and two a higher egg count than on the day prior to treatment. R.T.L.

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †be. HUNT, J. S., 1953.—“A method of preparation of whole mounts of miracidia and cercariae.” **39** (4, Sect. 2), Suppl. p. 24.
- †bf. FISCHTHAL, J. H., 1953.—“*Bialovarium nocomis* n.g., n.sp. (Cestoda: Caryophyllaeidae) from the hornyhead chub, *Nocomis biguttatus* (Kirtland).” **39** (4, Sect. 2), Suppl. p. 24.
- †bg. BYRD, E. E. & FITE, F. W., 1953.—“Morphological observations on normal and triradiated *Taenia pisiformis* from the dog.” **39** (4, Sect. 2), Suppl. p. 24.
- †bh. LEWERT, R. M. & LEE, C. L., 1953.—“The effects of *Taenia taeniaeformis* and *Amphimerus pseudofelineus* on the liver as shown by histochemical techniques.” **39** (4, Sect. 2), Suppl. pp. 24–25.
- †bi. READ, C. P. & VOGEL, M., 1953.—“The size attained by *Hymenolepis diminuta* in different host species.” **39** (4, Sect. 2), Suppl. p. 25.
- †bj. FONSECA, J. R. C., WILLIAMS, J. E., FREYTAG, R. E. & RITCHIE, L. S., 1953.—“Evaluation of field procedures related to molluscicidal applications.” **39** (4, Sect. 2), Suppl. p. 25.
- †bk. RITCHIE, L. S., OTORI, Y., FONSECA, J. R. C. & WILLIAMS, J. E., 1953.—“Information pertinent to destruction of eggs and newly-hatched of *Oncomelania nosophora* by molluscicides.” **39** (4, Sect. 2), Suppl. pp. 25–26.

(222be) Whole mounts of miracidia and cercariae can be satisfactorily made by putting a drop of water containing them on a slide smeared with Mayer's albumen fixative. The water is allowed to evaporate but just before dryness is reached, a drop of Carnoy's solution is added by a micropipette. As this dries, a drop of absolute alcohol is added. The material may be carried through a series of alcohols and stain may be dropped on the slide. Before the 70% alcohol is reached, the slide may be flooded with a thin layer of dilute nitrocellulose solution to form a protective film. The specimens can then be stored in 70% alcohol for an indefinite period. R.T.L.

(222bf) *Bialovarium nocomis* n.g., n.sp. was found in a *Nocomis biguttatus* in Wisconsin. This new cestode genus is briefly defined [but not differentiated from allied genera]. R.T.L.

(222bg) Three specimens of triradiate *Taenia pisiformis* showed, when sectioned, that the scolices and the strobilae were involved in the radiate conditions. The genital pores alternated irregularly between the three rays. One specimen had a segment with a supernumerary proglottis with three genital pores but only two ovaries, and over 400 testes. R.T.L.

(222bh) By using various histochemical methods on frozen dried liver to reveal alterations due to soluble substances, it was found that the changes associated with the presence of *Cysticercus fasciolaris* in rats closely resemble those seen in newly regenerated liver. In a cat's liver infected with *Amphimerus pseudofelineus*, the changes were particularly evident close to the areas of hyperplastic bile duct epithelium. These findings suggest that the action of these worms on the intercellular connective tissue elements is similar to that associated with penetration of the skin by various other helminths. R.T.L.

(222bi) When single specimens of *Hymenolepis diminuta* were established in various laboratory animals, there were significant differences in the size attained in 20 days in the different host species and these were, in general, related to the weight of the host. R.T.L.

(222bj) Local terrain, economic capability and available labour dictate the use of one or other of the various methods of applying molluscicides, e.g. dusting, continuous flow, impounded water, pressure spraying and sprinkling. With DN-1 [dinitro-*o*-cyclohexylphenol] continuous flow gave a mortality of 90%, impounding 90%–99% and flooding 57%–100%. R.T.L.

(222bk) The young of *Oncomelania nosophora* are aquatic for several weeks after hatching. The newly-hatched snail is highly vulnerable to toxic agents as it is without shell or operculum for a period. The eggs are much more resistant. As egg-laying may occur between early May and early August varying in different spots in the same area, repeated applications of chemicals during the summer, at three-week intervals, is suggested. R.T.L.

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †bl. WILLIAMS, J. E., FREYTAG, R. E., FONSECA, J. R. C. & RITCHIE, L. S., 1953.—“Determination of the relative efficiencies of molluscicides by means of field-plot dilution tests.” **39** (4, Sect. 2), Suppl. p. 26.
- †bm. DAUGHERTY, J., 1953.—“The synthesis of amino acids from ammonia in *Hymenolepis diminuta*.” **39** (4, Sect. 2), Suppl. pp. 26–27.
- †bn. GARSON, S. & DAUGHERTY, J., 1953.—“The metabolism of sulfur amino acids in *Hymenolepis diminuta*.” **39** (4, Sect. 2), Suppl. p. 27.
- †bo. DACRES, W. G., NYBERG, W. & DAUGHERTY, J., 1953.—“Vitamin B₁₂ and desoxyribonucleic acid relationship in *H. diminuta*.” **39** (4, Sect. 2), Suppl. p. 27.
- †bp. NYBERG, W., 1953.—“Vitamin B₁₂ uptake by *Hymenolepis diminuta*.” **39** (4, Sect. 2), Suppl. pp. 27–28.
- †bq. HEYNEMAN, D., 1953.—“Auto-reinfection in white mice resulting from infection with *Hymenolepis nana*.” **39** (4, Sect. 2), Suppl. p. 28.

(222bl) Twenty-five molluscicides, already recognized as effective against *Oncomelania nosophora*, were tested in 25-foot ditch sectors with quantities of active ingredients ranging from 0.6 gm. to 0.0125 gm. per sq. ft. Those with at least a 90% kill are listed with the amount per sq. ft. suggested for field tests, viz., sodium pentachlorophenate, dinitro-*o*-cyclohexylphenol, dinitro-*o*-sec-butylphenol, dinitro-isopropylphenol, dinitro-phenylphenol and dinitro-*o*-cresol. R.T.I.

(222bm) Experiments on *Hymenolepis diminuta* are cited which demonstrate that the fixation of ammonia by intermediates of carbohydrate metabolism may constitute an important mechanism for the synthesis of protein in this tapeworm. The anaerobic type of metabolism in *H. diminuta* is emphasized by the predominance of alanine in ammonia fixation. R.T.I.

(222bn) Experiments are summarized which support the hypothesis that the unusually large amount of taurine present in *Hymenolepis diminuta* results from the degradation of methionine to taurine via cystine as a result of the metabolism of the worm. R.T.I.

(222bo) During an investigation of the metabolism of *Hymenolepis diminuta*, the desoxyribonucleic acid (DNA) concentration and its metabolism in relation to vitamin B₁₂ and folic acid were studied. When rat serum and worm homogenate were incubated at 37°C for 48 hours in the presence of DNA, this was degraded to desoxyribosides and on the addition of vitamin B₁₂ or folic acid or both to the incubation mixture, the desoxyribosides were further broken down to purines and pyrimidines. R.T.I.

(222bp) When Co⁶⁰ labelled B₁₂ was given orally and intravenously to rats infected with *Hymenolepis diminuta*, there was no significant uptake of the radioactive B₁₂ by the worms. When, however, *H. diminuta* was incubated for 24 hours in B₁₂ fortified Tyrode's glucose solution, the uptake was significant but did not increase with additional B₁₂. The addition of gastric juice allowed an increase in uptake of Co⁶⁰ B₁₂ to an amount commensurate with the normal B₁₂ content of the worm. The radioactive B₁₂ taken up by the worm was metabolically bound. The discrepancy between the results of these *in vivo* and *in vitro* experiments could not be explained. R.T.I.

(222bq) Each of six uninfected, six-week-old mice was fed with 30 cysticercoids of *Hymenolepis nana* obtained from *Tribolium confusum*. At autopsy 21 days later, in addition to the adults which had developed from the cysticercoid infection, there were 1,000–2,000 very small immature worms in the lower ileum. There was no direct immune reaction to the initial infection but a well established immunity (which resulted from auto-infection) developed during the tissue phase and protected the host from continual auto-infection except when the host suffered from starvation, vitamin deficiency or illness. R.T.I.

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison Wisconsin, September 7–9, 1953.

22—Journal of Parasitology (cont.)

- †br. HEYNEMAN, D., 1953.—“Cross-immune protection against *Hymenolepis diminuta* by *H. nana* in white mice.” 39 (4, Sect. 2), Suppl. p. 28.
- †bs. ALEXANDER, C. G., 1953.—“Tetraphyllidean cestodes from the eastern Pacific.” 39 (4, Sect. 2), Suppl. pp. 28–29.
- †bt. MILLEMANN, R. E. & READ, C. P., 1953.—“The biology of *Oochoristica* and the status of linstowiine cestodes.” 39 (4, Sect. 2), Suppl. p. 29.
- †bu. WANTLAND, W. W., 1953.—“*Cysticercus fasciolaris* in the Syrian hamster.” 39 (4, Sect. 2), Suppl. p. 29.
- †bv. WANTLAND, W. W., 1953.—“*Cysticercus fasciolaris* in the wild rat and the development of this strobilocercus in the white rat.” 39 (4, Sect. 2), Suppl. p. 29.
- †bw. EGERTON, J. R., 1953.—“Statistical analysis applied to numbers of worms recovered by post mortem examination.” 39 (4, Sect. 2), Suppl. p. 30.
- †bx. COIL, W. H., 1953.—“Contributions to the life cycles of gorgoderid trematodes.” 39 (4, Sect. 2), Suppl. p. 31.

(222br) Mice, immune to *Hymenolepis nana*, were fed with *H. diminuta* cysticercoids developed in *Tenebrio*. None passed *H. diminuta* eggs. At autopsy 21 days later, several had one or two dwarfed immature *H. diminuta* but almost all were negative. All the controls passed *H. diminuta* eggs and contained from two to six fully developed *H. diminuta*. Simultaneous infection with cysticercoids of both species produced normal *H. nana* and both normal and dwarfed *H. diminuta*. The size of the *H. diminuta* varied with the rate of development of the *H. nana*. R.T.L.

(222bs) Approximately 54 species of the Tetraphyllidea have been collected from 21 species of selachians obtained on the coasts of California, Baja California and the Gulf of California. The majority represent undescribed species. R.T.L.

(222bt) The cysticercoids of *Oochoristica* sp. from kangaroo rats and of *O. scelopori* from lizards develop in the larvae or adults of *Tribolium confusum*. The former will also develop in *Gnathocerus cornutus* adults. As the anoplocephalines develop in oribatid mites whereas these linstowiines develop in Coleoptera, and as these two groups are anatomically distinct, recognition of the family Linstowiidae is held to be justified. R.T.L.

(222bu) Repeated attempts to infect *Mesocricetus auratus* with *Cysticercus fasciolaris* by various methods consistently failed. R.T.L.

(222bv) *Cysticercus fasciolaris* occurred in 80.45% of 532 wild rats from the city dump area of Bloomington, Illinois. The adult is common in the cats in this area. White rats tolerated extremely heavy infections with low mortality. As infection of the liver progressed, there was tremendous eosinophilic necrosis and marked fibrosis, with areas of abnormal cells proliferating from the surrounding capsules. Eight instances of mixed-cell sarcomas and four spindle-cell sarcomas were detected in infected livers of 100 white rats. The onset of the sarcomatous condition is preceded by pronounced eosinophilic necrosis and fibrosis. Some other factor or agent is also required to incite these types of sarcoma. R.T.L.

(222bw) The number of worms recovered from experimentally infected chickens followed the distribution described by the negative binomial $(q-p)^k$ but the analysis of variance is generally applied to observed numbers is not a valid analytical procedure. A transformation was sought which may be applied to observed values in order to “normalize” the data. R.T.L.

(222bx) Coil has found two non-cystocercous cercariae which differ from all other gorgoderid cercariae in possessing the following characters: a stylet, a natatory filamentous tail without anterior chamber, cystogenous glands surrounding the bladder and scattered throughout the body, a three-host life-cycle, and in developing in the viscera of unionid clams. R.T.L.

Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †by. FISCHTHAL, J. H., 1953.—"*Cercaria tiogae*, a new rhopalocercous form from the clam *Alasmidonta varicosa* (Lamarck)." 39 (4, Sect. 2), Suppl. p. 31.
- †bz. MCINTOSH, A., 1953.—"New host and distribution records for the Trematoda genus *Braunina* Heider, 1900." 39 (4, Sect. 2), Suppl. p. 31.
- †ca. VOGEL, M., 1953.—"Exogenous proliferation in a larval taeniid (Cestoda: Cyclophyllidae) from the body cavity of Peruvian rodents." 39 (4, Sect. 2), Suppl. p. 32.
- †cb. FELDMESSER, J. & TAYLOR, A. L., 1953.—"A method for revealing cuticular structure of nematodes." 39 (4, Sect. 2), Suppl. p. 32.
- †cc. DROPKIN, V. H., 1953.—"Infectivity and host response in root-knot nematode infections." 39 (4, Sect. 2), Suppl. p. 32.
- †cd. DOUGHERTY, E. C., 1953.—"Some observations on the monoxenic cultivation of certain rhabditid nematodes." 39 (4, Sect. 2), Suppl. p. 32.
- †ce. DOUGHERTY, E. C., 1953.—"Some observations on the axenic cultivation and attempted cultivation of certain rhabditid nematodes." 39 (4, Sect. 2), Suppl. pp. 32-33.

(222by) *Cercaria tiogae* n.sp. is a rhopalocercaria found emerging from *Alasmidonta varicosa*. It differs from known species by the pattern of sensory papillae, two or three on the posterior margin of the acetabulum, eight (rarely nine) on its dorsal surface and usually eleven on its ventral surface. It has nine pairs of penetration glands while still within the daughter sporocysts in the clam's gonads. On emerging, the cercarial tail forms an ovoid balloon-like structure without a posterior filament, within which the cercaria encysts. The metacercaria has one pair of penetration glands fewer than the cercaria in the daughter sporocyst and lacks cystogenous glands.

R.T.L.

(222bz) Specimens of *Braunina cordiformis* have been identified from *Tursiops truncatus* from Florida and *Stenella graffmani* from Panama Bay.

R.T.L.

(222ca) Clusters of 9 to 20 cysticerci, each connected by a slender stalk to a central vesicle, were lying free in the body-cavity of *Ctenomys peruanus*. The relatively large number found in several individual rodents indicates that this is a normal method of larval multiplication in this [unidentified] tapeworm.

R.T.L.

(222cb) When nematodes are left for two hours or overnight in aqueous or formalin solutions of china blue stain, particles of the stain collect in depressions, pits and cavities and show phasmids, cervical papillae, amphids, excretory pores etc. in relief.

R.T.L.

(222cc) This note merely states that in an effort to find, during a genetic study, additional characters for *Meloidogyne incognita* var. *acrita* measurements of infectivity and gall size on cucumber and tomato seedlings were made [but are not quoted].

R.T.L.

(222cd) *Rhabditis briggsae* and its micro mutant, *R. pellio* and *R. elegans* have been maintained for varying periods, generally at 18°C., on nutrient agar slants in monoculture with *Bacterium coli*. The interaction of *B. coli* and the substrate proved important in providing a suitable medium. On certain media, *B. coli* probably elaborates inhibitory substances or becomes difficult to digest. *R. elegans* is probably more exacting than *R. briggsae*.

R.T.L.

(222ce) *Rhabditis pellio* grows to large size on chick embryo pieces and in a medium of liver protein fraction C plus the supernatant from autoclaved liver homogenate, and reproduces abundantly on a medium containing chick embryo juice plus certain known chemicals. Apparently there are considerable nutritional differences between the several *Rhabditis* species tested by the author.

R.T.L.

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7-9, 1953.

222—Journal of Parasitology (cont.)

- †cf. DOUGHERTY, E. C., 1953.—“Axenizing and monoxenizing soil nematodes.” 39 (4, Sect. 2), Suppl. p. 33.
- †cg. STOLL, N. R., 1953.—“Infectivity for Japanese beetle grubs retained by *Neoaplectana glaseri* after seven years axenic culture.” 39 (4, Sect. 2), Suppl. p. 33.
- †ch. HERLICH, H. & PORTER, D. A., 1953.—“Prenatal infection of a calf with the nematode, *Neoascaris vitulorum*.” 39 (4, Sect. 2), Suppl. pp. 33–34.
- †ci. SPINDLER, L. A., 1953.—“Transmission of trichinae to swine through feces.” 39 (4, Sect. 2), Suppl. p. 34.
- †cj. HERMAN, C. M. & WEHR, E. E., 1953.—“Occurrence of *Amidostomum* in Canada geese.” 39 (4, Sect. 2), Suppl. p. 34.

(222cf) It is difficult to establish soil nematodes in axenic or monoxenic cultures because of the particular associated bacterial species in some cases. The antibiotic-merthiolate treatment should be followed by migration of larvae for several hours, or overnight, on a nutrient agar plate on which a thin layer of *Bacterium coli* has freshly grown. The bacteria which have survived the antibiotic-merthiolate treatment are left behind as the larvae crawl through and feed on the layer of *B. coli*. Only with this technique could *Rhabditis elegans* be monoxenized; it failed with *R. dolichura*. R.T.L.

(222cg) Japanese beetle grubs were experimentally infected by exposing them to larvae of *Neoaplectana glaseri* which had been maintained in axenic stock culture, serially, for an estimated 195 generations over a period of seven years. This retention of infectivity is ascribed to the adequacy of the kidney tissue type of cultures used and their inoculation with numerous larvae which permitted the maintenance of an essentially wild heterozygous population. R.T.L.

(222ch) Although seven calves from two to 180 days old were given single or multiple doses of 1,000 to 108,000 infective eggs of *Neoascaris vitulorum*, none was found to have become infected on subsequent faecal and post-mortem examination. Seven pregnant cows in the latter third of their gestation period were given from one to 20 doses of eggs totalling 815 to 124,000 over a period of one to 62 days, but none of their calves was infected. The calf of a cow which had received 38,800 eggs in 17 doses between impregnation and parturition was killed when 5½ weeks old, but no worms were found and no eggs had been present in the faeces. Another cow which had received 41,800 eggs in 17 doses between impregnation and parturition dropped twin calves. One of these continued to be negative for three months; the other passed fertile eggs 23 days after birth. A gravid female worm was passed four days later and no eggs or worms were evacuated subsequently. R.T.L.

(222ci) Twenty-nine *Trichinella*-free pigs were fed with faeces naturally passed by dogs, cats, albino rats and pigs which had eaten trichinous pork one to four days previously. At autopsy, 27 of the pigs harboured one to 12,373 trichinae per diaphragm. Of 32 *Trichinella*-free pigs given faeces eliminated by the experimentally infected animals four to 28 days after infection, 26 harboured one to 3,750 trichinae per diaphragm. The experimentally-fed animals from which the faeces were obtained all had massive infections of trichinae. R.T.L.

(222cj) A high incidence of *Amidostomum anseris* is reported in Canadian geese, *Branta canadensis*, from several localities in the U.S.A. The numbers in each goose averaged under 5 but in birds from a refuge in North Carolina the mean for the three years during which this investigation was pursued reached the seventies and in one bird there were over 1,500 specimens. R.T.L.

Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †ck. EHRENFORD, F. A., 1953.—“The incidence of some common canine intestinal parasites” 39 (4, Sect. 2), Suppl. pp. 34-35.
- †cl. KATES, K. C. & TURNER, J. H., 1953.—“An experiment on the pathogenic interaction *Haemonchus contortus* and *Nematodirus spathiger* in lambs.” 39 (4, Sect. 2), Suppl. p. 35.
- †cm. WEINSTEIN, P. P., 1953.—“The effect of cortisone on the development of the immune response in the white rat to *Nippostrongylus muris*.” 39 (4, Sect. 2), Suppl. p. 35.
- †cn. BRODY, G., 1953.—“The effect of pteroylglutamic acid, vitamin B₁₂ and related compounds on *Ascaridia galli* infections in chicks.” 39 (4, Sect. 2), Suppl. pp. 35-36.
- †co. FOSTER, A. O., 1953.—“Certain net effects of the free-choice administration of phenothiazine to sheep.” 39 (4, Sect. 2), Suppl. p. 36.

(222ck) Examination of two to three faecal flotations of 377 dogs from the States of Indiana, Illinois, Kentucky, Michigan, Ohio and Tennessee gave the following helminth incidence: *Toxocara* 24.9%, *Toxascaris* 5.3%, *Trichuris* 70.2%, *Uncinaria* 16.9%, *Ancylostoma* 50.9%, *Strongyloides* 1.5%, *Taenia* 45.3%, *Dipylidium* 16.1%. At autopsy on 186 of these dogs, *Physaloptera* occurred in 30.1% and it was found that *Uncinaria* had produced much less damage than *Ancylostoma*.
R.T.L.

(222cl) In lambs experimentally infected with mixed, sub-lethal doses of *Haemonchus contortus* and *Nematodirus spathiger* larvae, the clinical effects of each species were enhanced by the presence of the other. Diarrhoea was more severe than in lambs fed with *N. spathiger* larvae only and anaemia more acute than in lambs fed only with *H. contortus* larvae. The lambs with these mixed infections died or were near death, whereas lambs which received pure infections with one species were not so severely affected.
R.T.L.

(222cm) After five immunizing doses of *Nippostrongylus muris* had been injected over a period of weeks into the skin of white rats, larvae were allowed to penetrate the skin of the abdomen. Until necropsy, 11 days after the last exposure, injections of 2 mg. of cortisone were given daily and were begun prior to the first larval infection or five days before the skin exposure. In both instances the cortisone almost completely suppressed the cellular response in the skin and no larvae were found. It did not prevent the stunting of adult worms or suppress the formation of antibody in serum as measured *in vitro* by the formation of a precipitate at the excretory pore. Skin sections of rats similarly immunized but not treated with cortisone showed intense inflammatory reaction with many larvae trapped in nodules.
R.T.L.

(222cn) When a highly purified synthetic diet deficient both in vitamin B₁₂ and pteroylglutamic acid (PGA) was used for white Leghorn chicks infected with 500 embryonated eggs of *Ascaridia galli*, the number and length of the worms increased. When PGA only was deficient, only the number was increased and when vitamin B₁₂ alone was deficient, only the worm length increased. Vitamin C can in part replace vitamin B₁₂ activity on the worm and leucovorin in place of vitamin C can replace PGA in causing a reduction in worm numbers. This appears to confirm the belief that leucovorin is the active form of PGA and that vitamin B₁₂ participates in its formation from PGA.
R.T.L.

(222co) A long term programme of parasite control in sheep by the free-choice administration of phenothiazine and salt (1:9) was maintained over a period of 11 years with an experimental interruption for 165 days at the beginning of the sixth year. Periodical egg counts, occasional post-mortems and absence of morbidity or mortality showed that the parasites had been controlled but not eradicated. The interruption of the regimen resulted in losses which were checked by therapeutic doses. Although there were residual infections of ten potentially injurious species, they have apparently not provoked immunity adequate to give protection when the programme was discontinued. There was no evidence that phenothiazine-resistant strains had developed.
R.T.L.

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7-9, 1953.

222—Journal of Parasitology (cont.)

- †cp. ALICATA, J. E., 1953.—“Observations on the lethal action of polyborate on swine kidney-worm (*Stephanurus dentatus*) larvae in soil.” **39** (4, Sect. 2), Suppl. p. 36.
- †cq. LEVINE, N. D. & IVENS, V., 1953.—“The effects of some phenothiazine derivatives and analogs on horse strongyle developmental stages in feces.” **39** (4, Sect. 2), Suppl. pp. 36–37.
- †cr. MACDONALD, E. M. & SCOTT, J. A., 1953.—“Illustration of critical phases in the development of *Litomosoides carinii*, filarial parasite of the cotton rat.” **39** (4, Sect. 2), Suppl. p. 37.
- †cs. SCOTT, J. A. & MACDONALD, E. M., 1953.—“Recent developments in methods for maintaining and transmitting *Litomosoides carinii* in the laboratory.” **39** (4, Sect. 2), Suppl. p. 37.
- †ct. BEAVER, P. C., 1953.—“Infections resulting from three *Necator americanus* larvae.” **39** (4, Sect. 2), Suppl. p. 37.
- †cu. HEADLEE, W. H., 1953.—“Further observations on the incidence and the inconstancy of laboratory findings in enterobiasis.” **39** (4, Sect. 2), Suppl. p. 37.
- †cv. SPRENT, J. F. A., 1953.—“Intermediate hosts in *Ascaris* infections.” **39** (4, Sect. 2), Suppl. p. 38.
- †cw. ANDREWS, J. S., JONES, D. J. & SIPPEL, W. L., 1953.—“Clinical parasitism in cattle in Georgia.” **39** (4, Sect. 2), Suppl. p. 38.

(222cp) [The full account of this paper appears in *Amer. J. vet. Res.* 1953, **14**, 563–570. For abstract see *Helm. Abs.*, **22**, part 4.]

(222cq) Phenothiazine mixed with horse faeces in a concentration of 0.025 M. killed or prevented the development of the eggs and larvae of small strongyles. Of 11 phenothiazine derivatives only one was effective, viz., 1,3,7,9-phenothiazine tetrasulphonic acid, 5,5-dioxide, tetrapotassium salt, which killed or inhibited larval development in a concentration of 0.1 M. Of nine phenothiazine analogues tested, six were active, viz., pyocyanin dihydrochloride at a concentration of 0.005 M., phenazine at 0.1 M., phenoxathiin at 0.025 M., chlorophenoxathiin at 0.025 M., phenoxazine at 0.05 M. and xanthidrol at 0.05 M. R.T.L.

(222ct) Seven to eight weeks after three filariform larvae of *Necator americanus* had been placed on the forearm of each of nine volunteers, *Necator* eggs were passed by five. The skin reaction was mild but distinct in each case. There was no history of previous infection in eight of the volunteers. R.T.L.

(222cu) Data obtained by the cellulose adhesive tape method from children in hospital lend further support to Headlee's previous contention that only about 50% of those actually positive for *Enterobius* can be detected on any one day. This is held to be important in evaluating the efficacy of therapeutic agents in this infection. R.T.L.

(222cv) When sixty vigorous, third-stage larvae of human *Ascaris lumbricoides* were collected from the intestine of an experimentally infected mouse and swallowed in a gelatin capsule, anthelmintic treatment one month later produced no evidence of infection. Ten days after a five-week-old puppy had been fed on minced tissue of mice previously infected with eggs of *Toxocara canis*, three third-stage larvae, 2.048 mm.–2.954 mm. in length, were recovered from the intestine. In the mice the maximum length of the larvae was about 0.45 mm. Twenty days after feeding cats with minced tissue of mice containing *Toxascaris leonina* larvae (of maximum length about 0.66 mm.) third and fourth-stage larvae were recovered from the intestine: they had only increased in length to 0.721 mm.–0.736 mm. The larvae of *Ophidascaris filaria* in the liver of mice attained 13 mm. in length, causing severe and often fatal lesions within three weeks. The larvae also became encysted in the muscles of the forelegs. R.T.L.

(222cw) Twelve cattle, six to ten years old from six farms in Georgia, which were extremely weak and emaciated and mostly anaemic and suffering from severe watery diarrhoea, were found post mortem to have an average of 141,000 helminth parasites. There were in the most heavily infected animal, 568,000 worms, viz., *Ostertagia ostertagi* 532,500, *Trichostrongylus axei* 29,250, *Cooperia punctata* 6,250. In the mucosa of the large intestine there

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †cx. DEWHIRST, L. W., HANSEN, M. F. & ACKERT, J. E., 1953.—“Preliminary report on endoparasites of beef cattle in Kansas.” 39 (4, Sect. 2), Suppl. pp. 38–39.
- †cy. TURNER, J. H. & COLGLAZIER, M. L., 1953.—“Further studies of the value of phenothiazine, free-choice, against mixed infections of *Nematodirus* and *Haemonchus* in lambs.” 39 (4, Sect. 2), Suppl. p. 39.
- †cz. ENZIE, F. D. & WHITMORE, G. E., 1953.—“Photosensitization keratitis in young goats following treatment with phenothiazine.” 39 (4, Sect. 2), Suppl. p. 39.
- †da. ENZIE, F. D. & COLGLAZIER, M. L., 1953.—“Toluene (methylbenzene) against intestinal nematodes in dogs and cats.” 39 (4, Sect. 2), Suppl. p. 39.
- †db. HANSEN, M. F., PERSAUD, B. R. B. & ACKERT, J. E., 1953.—“Effects of certain anthelmintics on lumen and tissue phase of *Ascaridia galli* (Schränk).” 39 (4, Sect. 2), Suppl. pp. 39–40.
- †dc. LARSH, Jr., J. E. & RACE, G. J., 1953.—“A histopathologic study of the anterior small intestine of immunized and non-immunized mice infected with *Trichinella spiralis*.” 39 (4, Sect. 2), Suppl. p. 40.

were hundreds of fourth-stage larvae of *Oesophagostomum radiatum*. Among the factors responsible were: (i) imported susceptible stock, (ii) wet areas near drinking water, (iii) poor pasture and inadequate supplementary feeding, (iv) overstocking, (v) failure of anthelmintic to remove trichostrongyles other than *Haemonchus*.

R.T.L.

(222cx) Monthly counts of eggs per gramme of faeces in beef cattle kept under range conditions in the Flint Hills area of Kansas, showed a low incidence of intestinal helminths varying only slightly with the season. In the calves, there was a positive correlation between the average counts and the average maximum soil temperatures. It is suggested that the low winter temperatures exercise an indirect influence through the quantity and quality of the food consumed.

R.T.L.

(222cy) A free choice of phenothiazine-salt regimen gave considerable protection to lambs exposed to heavy mixed infections of *Nematodirus* and *Haemonchus*. In 24 weeks, lambs on contaminated pasture with access to phenothiazine and salt (1:9) gained 8 lb. more per animal and had higher haematocrit and haemoglobin levels than lambs with access to salt only. The carcass grade of those on phenothiazine averaged “good” whereas it was “medium” in those on plain salt.

R.T.L.

(222cz) [For abstract of full account see No. 215b above.]

(222da) [A fuller account appeared in *Vet. Med.*, 1953, 48, 325–328. For abstract see *Helm. Abs.*, 22, No. 151e.]

R.T.L.

(222db) The efficacy of four commercial anthelmintics [unnamed] and aureomycin was tested on laboratory-raised chicks infected with embryonated eggs of *Ascaridia galli*. None affected the numbers or the growth of the tissue phase larvae. Nicotine and phenothiazine, in combination, restricted the growth and reduced the numbers of lumen larvae. Only potassium antimonyl tartrate appeared to remove other than the less vigorous of the lumen larvae.

R.T.L.

(222dc) As early as twelve hours after mice previously immunized against *Trichinella* were reinfected, there was a mild inflammatory reaction throughout the intestinal mucosa and submucosa which became acute and reached its zenith in four days. The predominant cells were polymorphonuclear leucocytes. These gave place to mixed mononuclear cells as the reaction subsided. In non-immunized controls, the inflammatory reaction to infection developed much more slowly and reached its zenith in about 10 days. In both cases the cellular reaction reached its peak shortly before a sudden loss of worms, indicating that cellular mechanisms are involved in the resistance.

R.T.L.

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †dd. HENDRICKS, J. R., 1953.—“Passive transfer of resistance to *Trichinella spiralis* in mice.” 39 (4, Sect. 2), Suppl. pp. 40–41.
- †de. CAMPBELL, C. H., 1953.—“The effect of water starvation on the natural resistance of mice to *Trichinella spiralis*.” 39 (4, Sect. 2), Suppl. p. 41.
- †df. CAMPBELL, C. H., 1953.—“The use of the collodion particle agglutination test for detecting antibodies formed in response to *Trichinella spiralis* infection.” 39 (4, Sect. 2), Suppl. p. 41.
- †dg. LARSH, Jr., J. E., MCKENZIE, J. W., GREENBERG, B. G. & CAMPBELL, C. H., 1953.—“A comparison in mice of the infectivity of *Trichinella spiralis* larvae in normal saline solution and in a solution of nutrient broth and gelatin.” 39 (4, Sect. 2), Suppl. pp. 41–42.
- †dh. CHAN, K. F., 1953.—“The effect of storage at low temperatures on the infectivity of *Aspiculuris tetraptera* eggs.” 39 (4, Sect. 2), Suppl. p. 42.
- †di. PITTS, T. D. & BALL, G. H., 1953.—“*In vitro* culture of the larvae of *Ascaris lumbricoides* suum.” 39 (4, Sect. 2), Suppl. p. 42.

(222dd) Twelve mice were immunized by three stimulating infections of *Trichinella spiralis* at three-week intervals. Four weeks later, the serum from six was recovered and pooled; the other six were kept as immunized controls. Twelve previously uninfected mice were each given one intraperitoneal injection of 0.5 ml. of the pooled serum. Six non-immunized mice were kept as untreated controls. These 24 mice were infected with 200 *T. spiralis* larvae and necropsied seven days later. The number of worms recovered from the immunized controls averaged 54.2. From the non-immunized, non-treated controls, it averaged 140.6. The average number of worms from the 12 mice which received the pooled serum was 105.3, demonstrating that a passive transfer of resistance had been effected. R.T.L.

(222de) Observations are briefly reported which indicate that when mice are deprived of water for 17–20 hours after infection with *Trichinella spiralis*, the intestine is less favourable for the establishment and maintenance of the larvae than when adequate drinking water is made available. R.T.L.

(222df) Preliminary work indicates that antibodies occurring in rabbit serum following *Trichinella spiralis* infection can be detected by the collodion particle agglutination test. The usefulness of this test in experimental trichinellosis in mice is being studied further. R.T.L.

(222dg) When *Trichinella* larvae were administered to mice in a solution of nutrient broth and gelatin, a much greater percentage of adult *Trichinella spiralis* were recovered than when the larvae were given in normal saline. R.T.L.

(222dh) Eggs of *Aspiculuris tetraptera* representing different stages of development were kept in distilled water at 1°C.–4°C. After 40 days of refrigeration, they were returned to optimum conditions of moisture and temperature to complete their embryonic development. When fed to mice, the embryonated eggs resulted in infection. As *A. tetraptera* is used for the routine testing of anti-oxyurid drugs, a continuous supply of material for infecting experimental animals can be maintained by cold storage of the eggs. R.T.L.

(222di) Larvae of *Ascaris lumbricoides* of the pig hatched by centrifuge and kept in a specially designed culture chamber survived longest in a medium containing 3 gm. of yeast extract, 3.75 gm. of peptone, 3.75 gm. of glucose and 250 ml. of human serum made up to one litre with Fenwick's solution. The medium was Seitz filtered. Incubated at 37°C.–38°C., 3.6% of the larvae survived for 16 days, 21.2% for 32 days and 2.4% for 39 days. The increase in length of the larvae which survived 34 days averaged 20%. No complete moulting was observed but in a few of the larvae there were loosened sheaths. R.T.L.

Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7–9, 1953.

222—Journal of Parasitology (cont.)

- †dj. SADUN, E. H., 1953.—“Preliminary survey of helminthic diseases in Thailand.” **39** (4, Sect. 2 Suppl. pp. 42-43.

(222dj) From a preliminary investigation of the incidence of helminth infections in Thailand based on simple faecal smear examinations of over 7,000 persons selected at random in 29 provinces, it appears that the dominant species is *Ascaris lumbricoides* (32%) in the north, the central plains and in the south, but in the north-east it is *Opisthorchis viverrini* (27%)

R.T.L.

223—Journal of Pediatrics.

- a. ASKUE, W. E., 1953.—“A comparison of egressin and gentian violet in the treatment of enterobiasis (pinworm infestation).” **42** (3), 332-338.
- b. BUMBALO, T. S., GUSTINA, F. J. & OLEKSIK, R. E., 1953.—“The treatment of pinworm infection (enterobiasis) with papain.” **42** (5), 576-579.

(223a) In view of the excellent clinical results obtained with egressin in enterobiasis and the low incidence of toxic reactions, the effects of various dosages of egressin and gentian violet, with and without enemas, were compared. Egressin therapy, either for six days administered in two divided courses twelve days apart and each course followed by an enema, or a single five-day course, was no more effective than a five-day treatment with gentian violet. When given for seven days, gentian violet proved very successful.

R.T.L.

(223b) The good results obtained by Weise in cases of enterobiasis treated with papain were not confirmed. When the cure rate was determined by the Scotch tape technique carried out daily during the second week after treatment, only three out of thirty patients had seven consecutive negative smears and were considered cured.

R.T.L.

224—Journal of Pharmacology and Experimental Therapeutics.

- a. HALES, D. R. & WELCH, A. D., 1953.—“A preliminary study of the anthelmintic activity of cyanine dye No. 715 in dogs.” **107** (3), 310-314.
- b. WESTON, J. K., THOMPSON, P. E., REINERTSON, J. W., FISKEN, R. A. & REUTNER, T. F., 1953.—“Antioxyrid activity, toxicology and pathology in laboratory animals of a cyanine dye [6-dimethylamino-2-[2-(2,5-dimethyl-1-phenyl-3-pyrryl)vinyl]-1-methyl-quinolinium chloride].” **107** (3), 315-324.

(224a) As many cyanine dyes have been shown to have marked activity in experimental filariasis caused by *Litomosoides carinii*, their potential value in intestinal helminthiasis has been investigated. Compound No. 715 (1'-phenyl-2',5'-dimethyl-3'-pyrrole)-1-methyl-6-dimethylamino-(2-quinoline) dimethincyanine chloride) given orally to dogs had appreciable activity against *Ascaris*, *Trichuris* and *Ancylostoma* but was of no value against tapeworm infections. *Necator americanus* in human patients was only moderately susceptible. Toxic reactions were anorexia and occasional vomiting, mild but transient diarrhoea and mild fatty degeneration of the renal tubules. The renal changes were more pronounced when large doses were given frequently.

R.T.L.

(224b) Compared with gentian violet, compound No. 715 [see preceding abstract] was approximately 40 times as effective against *Syphacia obvelata* and five times as active against *Aspiculuris tetraptera* in mice. Its possible usefulness in human enterobiasis is suggested.

R.T.L.

225—Khirurgiya. Moscow.

- a. ALPEROVICH, P. M., 1953.—[A case of cerebellar unicameral echinococcosis.] Year 1953, No. 1, pp. 72-73. [In Russian.]
- b. YUSUF DZHANOV, K. I., 1953.—[Unusual localization of echinococcosis.] Year 1953, No. 1, pp. 74-75. [In Russian.]

† Abstract of paper presented at the 28th Annual Meeting, American Society of Parasitologists, Madison, Wisconsin, September 7-9, 1953.

226—Lancet.

- a. ASHER, R., 1953.—“Troublesome tapeworms.” Year 1953, 1 (6769), 1019–1021.
- b. DOWSETT, L. M. & BROWN, A. E., 1953.—“Treatment of oxyuriasis with diphenan.” Year 1953, 1 (6770), 1070–1072.
- c. FRANKL, E., 1953.—“Troublesome tapeworms.” [Correspondence.] Year 1953, 1 (6774), 1313.

(226a) Since 1943, Asher has seen in routine practice in London 13 patients with *Taenia saginata*. Although not a common cause of abdominal pain, a diagnosis of tapeworm is worth considering in cases of obscure origin. The clinical histories of two cases are cited in which the symptoms were severe. Twelve of the cases were cured by a standard course of filix mas. The thirteenth case was successfully treated by a second course to which carbon tetrachloride and oil of chenopodium had been added. R.T.L.

(226b) Although diphenan was given far in excess of the normal dosage for ten days to 174 schoolchildren with *Enterobius*, there were few cures and these were in lightly infected cases. In many the condition was unchanged and in some worsened. The results were based on findings with the cellophane tape technique. R.T.L.

(226c) A simple treatment for the removal of tapeworms is described. It can be carried out and completed in hospital or at home in 24 hours. After pretreatment, 8–10 ml. of extract of male fern as an emulsion in 20 ml. of liquid paraffin is passed through a duodenal tube into the duodenum. If the complete worm is not evacuated, a dose of magnesium sulphate is followed by a high enema with senna two hours later. R.T.L.

227—Leaflet. Ministry of Agriculture, Northern Ireland.

- a. ANON., 1953.—“Potato root eelworm.” No. 117, 4 pp.

228—Lebensmitteltierarzt.

- a. FROEHNER, 1953.—“Finnen- und Trichinenfunde bei Schweinen im Lande Niedersachsen in den Jahren 1950 und 1951.” 4 (4), 47.
- b. SCHÖNBERG, F., 1953.—“Zur Anwendung von Phasenkontrastmikroskopen in der Trichinenschau.” 4 (5), 56–57.

(228a) In Lower Saxony, 1,787,559 pigs were officially inspected in the year 1950. *Cysticerci* were present in 76 and trichinae in four. Of 2,305,227 animals inspected in 1951, 53 had *cysticerci* and four had trichinae. R.T.L.

(228b) Schönberg confirms his previous report [see Helm. Abs., 20, No. 237d] on the advantages of phase contrast microscopy in *Trichinella* inspection and supports his statement with further photomicrographs. A.E.F.

229—Madras Veterinary College Annual.

- a. ANANTARAMAN, M., 1953.—“The scope of helminthological research in India.” Year 1952–53, 11, 22–23.
- b. CHANDRASEKARIAH, P., 1953.—“A case report of canine oesophageal spirocercosis.” Year 1952–53, 11, 43–45.

(229b) This case report of oesophageal spirocercosis in a dog describes the successful removal under nembutal anaesthesia of a worm nodule revealed by X-ray examination. R.T.L.

230—Meddelande. Statens Växtskyddsanstalt. Stockholm.

- a. WIESER, W., 1953.—“On the structure of the cyst wall in four species of *Heterodera* Schmidt.” No. 65, 15 pp. [Swedish summary pp. 13–14.]

(230a) Wieser has studied the structure of the cyst wall in *Heterodera göttingiana*, *H. schachtii*, *H. avenae* [major] and *H. rostochiensis*. He describes and illustrates the several

layers as seen in section, the fibrils which, in surface view, give the appearance of punctation and the channels or pores which, he says, occur abundantly in cysts of all species of *Heterod.* M.T.

231—Medicina Colonial. Madrid.

- a. LALLEMAND CARPIO, A. & GASALLA CHACÓN, J. M., 1953.—“Reacciones Wassermann inespecíficas en líquido cefalorraquídeo a propósito de un caso de cisticercosis cerebral.” 21 (3), 248–268.

(231a) A case of cerebral cysticerciasis is described in which Wassermann tests with cerebrospinal fluid remained positive after successful treatment by craniectomy. P.M.

232—Medizinische Klinik.

- a. DIETHELM, L. & HEUCK, F., 1953.—“Der Wert des röntgenologischen Ascarisnachweises für die Diagnostik allergischer Darmerkrankungen.” 48 (16), 559–561.
b. SEITZ, K., 1953.—“Epidemiologische Uebersichtskarte der Askariasis im Rhein-Main-Neckar-Gebiet.” 48 (17), 618.

(232a) Diethelm & Heuck stress the importance of X-rays in the diagnosis of human ascaris infection. Of a series of 134 cases which were positive to X-rays 91 (67·8%) gave negative faecal examinations. They recommend that X-rays should be used in all cases of unexplained intestinal symptoms where faecal examinations have proved negative. A.E.

(232b) Seitz presents a map showing the incidence of ascariasis in the Rhine-Main-Neckar area of Germany and discusses the epidemiological factors involved. Between the years 1949 and 1952, 426,508 children were examined and 26·3% were found positive for ascaris. The districts where the incidence reached over 80% are the Darmstadt-Griesheim area, the district north-west of Speyer and the rural area lying between Kaiserslautern, Pirmasens and Landau. P.M.

233—Mémoires de l'Institut Royal Colonial Belge. Section des Sciences Naturelles et Médicales.

- a. FAIN, A., 1953.—“Contribution à l'étude des formes larvaires des trématodes au Congo belge et spécialement de la larve de *Schistosoma mansoni*.” 22 (5), 312 pp.

(233a) This monograph on the morphology, biology and systematics of 59 larval trematodes is based on living material collected from fresh-water gastropods of the Belgian Congo and more particularly from those of Albert Nyanza. The molluscs were identified by J. Bequaert. The cercariae, of which 55 out of the 59 are new, are arranged under the following groups: (i) monostome cercariae: *Cercaria cochlea* n.sp.; (ii) amphistome cercariae: *C. nigrata* n.sp., *C. congoicola* n.sp., *C. obscurior* n.sp., *C. truncatulae* n.sp.; (iii) echinostome cercariae: *C. bruynoghei* n.sp., *C. decora* n.sp., *C. densi* n.sp., *C. lagrangei* n.sp., *C. cuneata* n.sp.; (iv) gymnocephalic cercariae: *C. sigmoïda* n.sp., *C. atomica* n.sp., *C. bithyniella* n.sp., *Metacercaria alestes* n.sp., *C. lileta* n.sp., *C. dollfusi* n.sp., *C. symphoriani* n.sp., *C. ituriensis* n.sp.; (v) cystophorous cercariae: *C. aequatorialis* n.sp., *C. bulla* n.sp.; (vi) xiphidiocercariae: *C. pneumata* n.sp., *C. porteri* n.sp., *C. kawa* n.sp., *C. dissimilis* n.sp., *C. liliputa* n.sp., *C. kungu* n.sp., *C. aciculata* n.sp., *C. furtiva* n.sp., *C. duren* n.sp., *C. physopsa* n.sp., *C. blukwa* n.sp., *C. dartevellei* n.sp., *C. granulata* n.sp., *C. guttera* n.sp., *C. schoetteri* n.sp., *C. rieli* n.sp.; (vii) furcocercariae: *C. albertiana* n.sp., *C. duboisi* n.sp., *C. schwetzi* n.sp., *C. muda* n.sp., *C. congolensis* n.sp., *C. brusaerti* n.sp., *C. laticaece* n.sp., *C. neujeani* n.sp., *C. rodhaini* n.sp., *C. rufula* n.sp., *C. bequaerti* n.sp., *C. megacoelia* n.sp., *C. inflaticauda* n.sp., *C. berghei* n.sp., *C. wanson* n.sp., *C. kasenyi* n.sp., *C. schoutedeni* n.sp., *C. baeri* n.sp.; (viii) metacercariae: *Metacercariaeum bonei* n.sp.; (ix) unclassified: *C. dimorpha* n.sp. The life-cycle of *Fasciola gigantica* was experimentally reproduced in the laboratory in *Radix natalensis undussumae*. About 4% of the molluscs are naturally infected in the Blukwa region and at Sake on Lake Kivu. *Radix natalensis jouberti* was also a natural carrier. *Galba truncatula*, the chief vector

of *F. hepatica* in Europe, was found in the Belgian Congo but plays no part in the transmission of *F. gigantica*. The principal characters, movements and vectors of the cercaria of *Schistosoma mansoni* receive considerable attention and the problem of the development of *S. mansoni* at an altitude of 1,800 metres is discussed.

R.T.L.

234—Memorias de la Sociedad Cubana de Historia Natural "Felipe Poey".

- a. DUBOIS, G. & PÉREZ VIGUERAS, I., 1953.—"*Notocotylus lopezneyrai* n.sp. (Trematoda, Notocotylidae), parásito del intestino del *Rosthramus sociabilis levis* Friedman (Aves)." 21 (3), 251-255.

(234a) *Notocotylus lopezneyrai* n.sp. from *Rosthramus sociabilis levis* in the Cuban province of La Habana is distinguished from *N. ephemera* by its greater size, by the larger number of ventral glands (the lateral rows each having 11-12 and the median row 13), by the larger cirrus sac and by having only 14-15 uterine loops. The characters of *N. lopezneyrai* are added to Dubois' key to the genus (1951).

F.M.B.

235—Mikrokosmos.

- a. STRENZKE, K., 1953.—"Zuckmücken als Zwischenwirte für Saugwürmer." 42 (8), 169-174.

(235a) The life-cycle of *Plagiorchis maculosus* is outlined. The cercariae invade the larvae of the midges *Chaoborus crystallinus* and *Chironomus thummi* and encyst in the body-cavity. The mature worms are found in *Aidemosyne cantans*. The various stages are described and illustrated by photomicrographs.

R.T.L.

236—Mitteilungen aus der Biologischen Zentralanstalt für Land- und Forstwirtschaft.

- a. HOMEYER, B., 1953.—"Die Prüfung von Nematodenmitteln auf fluoreszenzoptischem Wege." No. 75, pp. 232-235.

(236a) Homeyer points out that determination of death in nematodes is difficult and that a simple and rapid method of doing so is essential to an accurate assessment of the efficacy of nematocides. He describes his technique of staining worms with acridine orange and by means of experiments with stem and leaf eelworms, with larvae of cyst-forming nematodes and with specimens of such genera as *Rhabditis*, *Cephalobus* and *Diplogaster* has shown that all dead nematodes exposed to acridine orange appear red in the fluorescence microscope while living ones appear green. The technique is also of value in determining injury since the injured part has a local red colouring while the remainder of the worm appears green.

A.E.F.

237—Monatshefte für Veterinärmedizin.

- a. NICKEL, S. & SOSSDORF, F., 1953.—"Eine Leberegelbekämpfungsmassnahme in Spoldershagen 1952." 8 (5), 96-98.
b. SOSSDORF, F., 1953.—"Antimosan-Atropin-Behandlungsversuche gegen kleine Lungenwürmer bei Schafen und Ziegen." 8 (12), 250-252.
c. SCHRÖTER, A., 1953.—"Zur Bekämpfung der Magenwurmkrankheit der Schafe." 8 (18), 435-438.

(237a) Nickel & Sossdorf describe the methods adopted to combat liver-fluke disease at Spoldershagen (district of Rostock) in 1952. All cattle and sheep were removed from the meadows; the pumping system was repaired and the waterlogged areas drained. Meadows and the drinking pond were then treated with copper sulphate and the ditches cleared of weeds; geese and ducks were introduced to the meadows to control snails. 192 cattle and 142 sheep were treated with "Distophin" (containing pure hexachlorethane and tetrachlorethylene) at a dosage of 10 c.c. per 50 kg. body-weight daily for three days. This treatment was well tolerated. Faecal counts of 20 cattle and 10 sheep after two weeks showed only two positives; after seven weeks 4 cattle and 4 sheep were positive for liver-fluke, from which the authors conclude that "Distophin" is only effective against mature flukes.

A.E.F.

(237b) For the treatment of *Muellerius capillaris* infection in sheep and goats Sossdorf has used intratracheal antimosan (2 doses each of 1 c.c. per kg. body-weight with a 24-hour interval) preceded by subcutaneous injection of 2.0 c.c. to 2.5 c.c. atropin to dilate the smallest bronchi and bronchioles and to reduce bronchial secretion. When atropin was given before each injection of antimosan there was a slightly increased larval count in the first five days followed by a gradual decrease up to the 25th day; larval counts then increased until, by the 35th day, infection was almost as severe as before treatment. Controls given antimosan alone showed similar results. When atropin was given only before the first antimosan injection there was a pronounced reduction in larval count during the first five days but by the sixth day infection had again reached pre-treatment severity (in some cases it was even higher) and had not lessened after three to four weeks. Although not entirely satisfied with these results Sossdorf believes that atropin increases the efficacy of antimosan. A.E.F.

(237c) Schröter has treated stomach worm disease in sheep with "Trichostrongylin" tablets (containing a copper-arsenic compound). Three series of experiments, involving a total of 25 sheep and lambs, were carried out and dosage varied from one to three tablets on each of two successive days (as recommended by the manufacturers) to twice or even three times this amount. While the drug was well tolerated it was not effective against stomach worms (except to some degree against *Haemonchus contortus*). Schröter concludes that "Trichostrongylin" is not as efficient as phenothiazine and that copper-arsenic compounds in general show little promise against stomach worms. A.E.F.

238—Nachrichtenblatt des Deutschen Pflanzenschutzdienstes.

- a. HOMEYER, B., 1953.—"Die Unterscheidung lebender und toter Stockälchen (*Ditylenchus dipsaci* Kühn) durch Fluorochromierung mit Akridinorange." 5 (1), 8-11.

(238a) Homeyer shows that a slightly alkaline solution of acridine orange of 1:5,000 to 1:10,000 used for 20-30 minutes distinguishes between dead, and inactive but living specimens of *Ditylenchus dipsaci* when these eelworms are examined by ultra-violet light. Living eelworms fluoresce green and dead ones red. Acridine orange was relatively innocuous to stem eelworm. The method is suggested as a quick test for the efficacy of nematocides and as even partial injury to the nematodes shows up as red fluorescence, it can be used to estimate the minimum lethal dose. J.B.G.

239—Nature. London.

- a. WRIGHT, C. A., 1953.—"Probable relationship between the Rhodometopa group of cercariae and the trematode genus *Renicola* Cohn." [Correspondence.] 171 (4363), 1072-1073.
 b. KENDALL, S. B. & PARFITT, J. W., 1953.—"Life-history of *Fasciola gigantica* Cobbold 1856." [Correspondence.] 171 (4365), 1164-1165.
 c. LEIPER, R. T., 1953.—"Dr. Tom Goodey, O.B.E., F.R.S." [Obituary.] 172 (4370), 184-185.
 d. MUIRHEAD-THOMSON, R. C., 1953.—"Inter-relations between filarial and malarial infections in *Anopheles gambiae*." [Correspondence.] 172 (4373), 352-353.
 e. WHITE, J. H., 1953.—"Wind-borne dispersal of potato-root eelworm." [Correspondence.] 172 (4380), 686-687.

(239a) Wright reports the finding of 10 specimens of a species of *Renicola* formerly found in king penguins in the Edinburgh Zoo [see Helm. Abs., 12, No. 246d] in the kidneys of a guillemot, *Uria aalge*. The excretory vesicle of young adults showed marked similarity to that of the Rhodometopa group of cercariae, particularly *Cercaria pythionike*, and it is suggested that a study of the larval stages may be of value in establishing the true systematic position of this somewhat disputed genus. P.M.B.

(239b) Egg-masses of *Limnaea auricularia rufescens* and eggs of *Fasciola gigantica* were sent to England by air from Pakistan. Snails were developed from these egg masses and were infected with miracidia which hatched from the *Fasciola* eggs in 78 days. 200 of the resulting cercariae were given to a calf over a period of nine days and 110 days later eggs of *F. gigantica* were recovered from the faeces. R.T.L.

(239d) Muirhead-Thomson has observed a curious relation in double infections of wild *Anopheles gambiae* with malaria and filaria. When the sporozoite infection was heavy, mature filarial larvae were rarely present in the thorax in dissections in which the head and proboscis were not examined for filariae. In a further series of dissections in which the head and proboscis were examined for the more advanced forms, few of the mosquitoes were found infected with both species of parasite. It was, however, not unusual to find specimens harbouring sporozoites or mature oocytes and immature, stumpy, thoracic, filarial larvae. In experimental, simultaneous infections, both infections proceeded side by side. The explanation of the rarity of the double infections in wild mosquitoes may be due to the fact that the filarial infection of the head and proboscis is very transitory, and older mosquitoes may have already lost their filarial infection early in the development of the malarial infection of which the sporozoite stage may persist for weeks in the salivary glands. R.T.L.

(239e) That dust storms are of considerably greater importance than implements, seed potatoes etc. in bringing about the local dispersal of cysts of *Heterodera* is illustrated by data collected from three traps at Wroot in the Isle of Axholme in Lincolnshire. In one day at least 5,180 viable cysts of *Heterodera rostochiensis* moved over a front 15 inches wide and 4 ft. 6 in. high in a field of light sand and peat where the infestation numbered only 8 viable cysts per 25 gm. of soil. This is equivalent to approximately 1,250,000 cysts over a 100 yd. front to a height of 4 ft. 6 in. R.T.L.

240—New Jersey State Horticultural Society News.

- a. NISSLEY, C. H., 1953.—“Larvacide used to control nematodes.” 34 (5), 2672.

(240a) This is a brief account of the application of Larvacide (tear gas) to a hot-bed where root knot nematodes were present. [No results of the application are given.] M.T.F.

241—Nordisk Medicin.

- a. BONSDORFF, B. VON, 1953.—“Perniciös maskanemi.” 49 (18), 633–638. [English summary p. 638.]

(241a) From experimental investigations into the pathogenesis of pernicious anaemia due to *Diphyllobothrium latum*, Bonsdorff and his co-workers conclude that a combination of the following factors over a sufficiently long time is necessary: the presence of *D. latum* in the first part of the small intestine where it competes with its host in absorbing vitamin B₁₂ and possibly some other haematopoietic substances, and a deficiency in supply of extrinsic factor and/or a decreased production of intrinsic factor. R.T.L.

242—Norsk Landbruk.

- a. RØED, H. & STØEN, M., 1953.—“Kløverrate og kløverål, to aktuelle kløversjukdommer.” 19 (4), 82–86.

(242a) Stem nematode (*Ditylenchus dipsaci*) has been found attacking red clover in different parts of Norway. In an investigation in 1951 and 1952 nematodes were found in 35% of the total number of leys studied. Breeding work has been initiated to develop resistant strains of red clover. S.B.

243—North American Veterinarian.

- a. HITCHCOCK, D. J., 1953.—“Incidence of gastro-intestinal parasites in some Michigan kittens.” 34 (6), 428–429.
b. SHELTON, G. C., 1953.—“Re-examination of some aspects of the hydatid tapeworm *Echinococcus granulosus* (Batsch 1786).” 34 (7), 487–490.
c. HAYES, I. E., 1953.—“Nematode dermatitis in the dog caused by *Rhabditis strongyloides*.” 34 (8), 571.
d. RHODE, E. A., JASPER, D. E., BAKER, N. F. & DOUGLAS, J. R., 1953.—“The occurrence of *Rhabditis dermatitis* in cattle.” 34 (9), 634–637.

(243a) At autopsies on 147 kittens in Michigan the incidence of helminth infections was as follows: *Ancylostoma caninum* 3%, *Toxocara cati* 67%, *T. canis* 1%, *Toxascaris leonina*

1%, *Physaloptera rara* 1%, *Dipylidium caninum* 1%, *Taenia taeniaeformis* 0.5%. The infection were low and produced no clinical symptoms.

R.T.L.

(243b) Shelton mentions that *Echinococcus granulosus* has apparently been diagnosed only once as a natural infection in the dog in the U.S.A., namely by Curtice in 1892. Yet the Report of the Chief of the Bureau of Animal Industry states that the livers of 2,720 cattle and 117 calves were condemned because of hydatid cysts in 1950. No records of its incidence in sheep and pigs are available. Two dogs which were fed with hydatid cysts had gravid segments after ten weeks. Diagnosis by a combined maceration-flotation technique proved negative but it was not ascertained that any gravid segments had ever been passed in the faeces.

R.T.L.

(243c) Extensive dermatitis with numerous pustules covered the hind legs and extended to both flanks of a dog. Scrapings of the lesions revealed great numbers of *Rhabditis strongyloides*. The only previous case of this disease in dogs in North America was reported by Chitwood in 1932.

R.T.L.

(243d) A rapidly spreading outbreak of dermatitis in a Holstein dairy in California was associated with the presence of *Rhabditis* sp. in the skin scrapings of red, raw, oedematous areas, partly denuded of hair on the ventral abdomen, the flank, the hind legs and the udder. Tremendous numbers of *Rhabditis* were also present in the upper layers of the moist rice hull bedding in which there was considerable fermentation.

R.T.L.

244—Pastoral Review. Melbourne.

- a. FETHERS, G., 1953.—“Phenothiazine for sheep.” 63 (3), 225–226.
- b. McEACHERN, H., 1953.—“Phenothiazine and brand marks in wool.” [Correspondence.] 63 (3), 249.
- c. MONTGOMERY, I. W., 1953.—“Phenothiazine and brand marks in wool.” [Correspondence.] 63 (3), 249.
- d. SPARKS, R. C., 1953.—“Phenothiazine risks in sheep.” [Correspondence.] 63 (3), 249, 251.
- e. FETHERS, G., 1953.—“Fluke in sheep.” 63 (4), 346–347.
- f. ANON., 1953.—“Phenothiazine, its merits and importance.” 63 (4), 349.

245—Pflanzenschutz. Munich.

- a. KOLTERMANN, A., 1953.—“Lehren aus dem seinerzeitigen Auftreten des Kartoffelnematoden in Pommern.” 5 (1), 9–11.

(245a) Koltermann reviews the situation with regard to the potato-root eelworm in Pomerania. It is common on small areas of land where potatoes have been grown continuously for many years. No satisfactory means of control can be recommended but potatoes should never be grown more often than once in three years. Koltermann is doubtful whether potato sickness is always due solely to the nematode.

M.T.F.

246—Phytopathology.

- a. GRAHAM, T. W. & HOLDEMAN, Q. L., 1953.—“The sting nematode *Belonolaimus gracilis* Steiner: a parasite on cotton and other crops in South Carolina.” 43 (8), 434–439.

(246a) *Belonolaimus gracilis*, a root surface feeder, causes retardation of growth and decay and results in serious losses in cotton, maize, soya beans and cowpeas in South Carolina. Microscopical examination of root damage does not aid diagnosis since the eelworms do not live on the diseased roots. Identification can only be made by examination of the soil. In large areas of cotton fields there was practically no growth. Normal production was restored by fumigating the infested soil with 20 gallons per acre of Dowfume W-40. As tobacco is resistant to *B. gracilis* it can be used as a rotation crop in infested cotton fields.

R.T.L.

246—Phytopathology (cont.)

- †b. ANDERSON, E. J. & OKIMOTO, M., 1953.—“Laboratory studies of effectiveness of 3,5-dimethyltetrahydro-1,3,5,2-thiadiazine-2-thione against certain plant parasitic fungi and nematodes.” 43 (9), 465.
- †c. BAINES, R. C. & MARTIN, J. P., 1953.—“Effect of soil fumigation on growth and yield of Valencia orange trees.” 43 (9), 465-466.
- †d. FEDER, W. A., 1953.—“The influence of the feeding habit upon the nematocidal action of Systox.” 43 (9), 471.
- †e. FEDER, W. A. & FELDMESSER, J., 1953.—“The structure and cytology of *Ditylenchus dipsaci*-induced ‘spikkels’ in leaves of *Narcissus pseudonarcissus*.” 43 (9), 471.
- †f. FELDMESSER, J., 1953.—“A cytological study of the effects of the golden nematode, *Heterodera rostochiensis*, on tomato.” 43 (9), 471.
- †g. HARE, W. W., 1953.—“Nematode resistance in pepper.” 43 (9), 474.

(246b) A mixed population of nematodes in potted soil was reduced from 620 to 20 per 100 gm. by treatment with 3,5-dimethyltetrahydro-1,3,5,2-thiadiazine-2-thione at the rate of 50 lb. per acre foot and to 3 per 100 gm. at the rate of 100 lb. Tomato plants used as indicators had one gall in root-knot infested soil treated at the rate of 50 lb. and none at the 100 lb. rate, whereas those in the untreated infested soil had 500 galls. R.T.L.

(246c) When Romona sandy loam soil which had been cropped with oranges for 25 years was fumigated prior to planting with young Valencia orange trees, the growth and yield of the trees was increased. All D-D and ethylene dibromide treatments eradicated the citrus nematode in samples taken at 0-5 feet in depth. After chloropicrin, 2% and after carbon disulphide, 10% of the nematodes survived. Deep injections did not give increased eelworm control or improved growth and yield. R.T.L.

(246d) Systox vapours are not lethal to *Rhabditis* sp. or *Ditylenchus dipsaci* but both are killed by ingesting Systox in plant tissue. An 0.5% aqueous suspension kills free-swimming *Rhabditis* sp. in one hour but free-swimming *D. dipsaci* survive 48 hours. 0.05% Systox is lethal in 10 seconds to *D. dipsaci* in treated bulb tissue. *Rhabditis* sp. is also killed by feeding on dead or inert material impregnated with Systox. R.T.L.

(246e) The “spikkeled” areas and sickle shape of the leaves of *Narcissus* infected with *Ditylenchus dipsaci* are due to hypertrophy and hyperplasia in areas adjacent to nematode foci. The “spikkels” are homologous with nematode galls. The mode of feeding of *D. dipsaci* is probably the same as that of *Heterodera* and *Meloidogyne*. R.T.L.

(246f) During its second stage the larva of *Heterodera rostochiensis* enters the growing secondary and tertiary roots of tomatoes and cells adjacent to it have dense cytoplasm and thickened walls. The third larval stage develops in the cortex and stele causing discontinuity and retardation of the differentiation of vascular elements and some external evidence of galling. During the 4th and 5th larval stages, giant cell areas become more extensive and cut off greater areas of vascular tissue. The formation of giant cells results in fragmentation and dissolution of cell walls with coalescence of the cytoplasmic masses and the aggregation of the nuclei of previously intact cells. R.T.L.

(246g) Certain peppers have a high but incomplete resistance to root-knot nematodes. Pure cultures of *Meloidogyne incognita*, *M. incognita* var. *acrita*, *M. arenaria*, *M. javanica* and *M. hapla* were introduced into sterilized soil and Southland tomatoes were then grown to increase the soil infections. 77 days afterwards, the plants were examined for eelworm injury. *M. arenaria* caused slight damage to Oakview Wonder, M81A and M41. *M. incognita* and *M. incognita* var. *acrita* were severe on Oakview Wonder and M81A; M41 and Red Chili were moderately affected and M152B was not injured. Santanka X5 was not injured by *M. incognita* and only slightly by *M. incognita* var. *acrita*. *M. hapla* was severe on all the varieties except Red Chili which was moderately affected. *M. javanica* did not injure any variety. R.T.L.

† Abstract of paper presented at the 45th Annual Meeting of the American Phytopathological Society, Madison, Wis., September 7-10, 1953.

246—Phytopathology (cont.)

- †h. HENRY, B. W., 1953.—“Effects of ethylene dibromide on nematodes associated with a root rot of southern pine seedlings.” 43 (9), 474-475.
- †i. HOLDEMAN, Q. L. & GRAHAM, T. W., 1953.—“The sting nematode breaks resistance to cotton wilt.” 43 (9), 475.
- †j. SASSER, J. N., POWERS, Jr., H. R. & LUCAS, G. B., 1953.—“The effect of root-knot nematodes (*Meloidogyne* spp.) on the expression of black shank resistance in tobacco.” 43 (9), 483.
- †k. TARJAN, A. C., 1953.—“Nematicidal potentialities of some agricultural pesticides based on contact, ovicidal, and therapeutic tests.” 43 (9), 485-486.
- †l. WILLIAMSON, C. E., 1953.—“Methyl bromide injury to some ornamental plants.” 43 (9), 489.

(246h) Examination of roots and rhizosphere of longleaf pine seedlings by the Baermann funnel technique failed to reveal any eelworms in nursery beds which had been treated with ethylene dibromide three weeks previous to seeding, and very few throughout the subsequent four weeks. Five weeks after seeding the population equalled and by eight weeks had increased tenfold that of the untreated beds. By 20 weeks it had declined to one-and-a-half times that of the untreated beds. The increase in the treated beds was due entirely to nonpathogenic *Acrobeloides* spp.

R.T.L.

(246i) When sting nematodes and *Fusarium* cultures were added to autoclaved soil and planted with resistant and susceptible cotton plants, both varieties succumbed to wilt, but the susceptible variety showed a higher percentage of wilt. When *Fusarium* inoculum alone was used, the resistant variety showed no wilt, and often wilt on the susceptible variety was very low.

R.T.L.

(246j) Black-shank resistant tobacco seedlings were transplanted to pots of steamed soil, inoculated with (i) *Phytophthora parasitica* var. *nicotianae*, (ii) one species of *Meloidogyne*, (iii) both *P. parasitica* var. *nicotianae* and *Meloidogyne*. The seedlings in (i) and (ii) and in non-inoculated controls grew well, but those in (iii) wilted within a week and all were dead within a month. In another experiment, the steamed soil was inoculated with *Meloidogyne* sp. and a month after black-shank seedlings had been planted, the soil was inoculated with *P. parasitica* var. *nicotianae*. Thirty days later, 78% of the plants had black shank whereas root-knot free plants which had been grown in soil inoculated with black-shank fungus at the same time showed no black shank symptoms.

R.T.L.

(246k) When *Panagrellus redivivus* was used, Heptachlor 2E (1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydoro-4,7 methanoindene), Stauffer Experimental Compound N-244 (3-p-chlorophenyl-5-methyl rhodanine) and Hyman Experimental Compound 51-P-162 (hexachlorocyclopentadiene) were the most effective contact nematicides of several investigated. The most effective ovicidal chemicals were Stauffer N-244 and Heptachlor 2E. Systox, Malathion (o,o-dimethyl dithiophosphate of diethyl mercapto succinate), Stauffer N-244 and Heptachlor 2E had nematicidal properties when applied in water emulsion at the rate of 4 gm. or less per sq. ft. to soil in which tomatoes infected with *Meloidogyne incognita* were growing. R.T.L.

(246l) Experiments are summarized which demonstrate that injury to carnations by methyl bromide fumigation is proportional to the amount of colloidal clay and organic matter in the treated soil and is not reduced by aeration, heat, pH change or the addition of calcium salts. Similar symptoms were produced by sodium bromide when mixed with the soil. R.T.L.

† Abstract of paper presented at the 45th Annual Meeting of the American Phytopathological Society, Madison, Wis., September 7-10, 1953.

247—Plant Disease Reporter.

- a. BIRCHFIELD, W., 1953.—“A parasitic nematode found on deteriorating roots of sugarcane.” 37 (1), 38.
- b. JENSEN, H. J., 1953.—“Observations on the root lesion nematode disease of narcissus and progress of control.” 37 (1), 39-40.
- c. WELLS, J. C., HANSON, C. H. & ALLISON, J. L., 1953.—“The reaction of Rowan, Korean and Kobe lespedeza to root-knot nematode species.” 37 (2), 97.
- d. MACHMER, J. H., 1953.—“*Criconeimoides* sp., a ring nematode associated with peanut ‘yellows’.” 37 (3), 156.
- e. THAMES, Jr., W. H. & STONER, W. N., 1953.—“A preliminary trial of lowland culture rice in rotation with vegetable crops as a means of reducing root-knot nematode infestations in the Everglades.” 37 (4), 187-192.
- f. RASKI, D. J. & ALLEN, M. W., 1953.—“Control of root-knot nematode on cotton.” 37 (4), 193-196.
- g. RASKI, D. J. & HART, W. H., 1953.—“Observations on the clover root nematode in California.” 37 (4), 197-200.
- h. BOSHER, J. E., 1953.—“Potato rot caused by the iris bulb nematode in British Columbia.” 37 (4), 201-202.
- i. STEINER, G., 1953.—“Changes in basic concepts in plant nematology.” 37 (4), 203-205.
- j. TARJAN, A. C. & HOPPER, B. E., 1953.—“Effect of increased photoperiod on egg mass production by the root-knot nematode, *Meloidogyne incognita* (Kofoid and White) Chitwood.” 37 (5), 313-314.
- k. TARJAN, A. C., 1953.—“Geographical distribution of some *Meloidogyne* spp. in Israel.” 37 (5), 315-316.
- l. ALEXANDER, L. J. & HOOVER, M. M., 1953.—“Progress report of National Screening Committee for Disease Resistance in the Tomato for 1952.” 37 (5), 317-324.
- m. BAZÁN DE SEGURA, C., 1953.—“More about the golden nematode in Peru.” 37 (5), 326.

(247a) The roots of sugar-cane plants at Raceland, Louisiana, affected with *Sclerospora* disease showed a large number of *Pratylenchus*. The lowest counts were from the most severely affected root systems. It is suggested that some of the nematodes may have left prior to the death of the roots. The relation of the eelworms to the *Sclerospora* disease was not ascertained.

R.T.L.

(247b) *Pratylenchus* sp. is responsible for premature dying of the foliage and crops of narcissus in the Pacific North-West. The symptoms reappear each time the fields are in production. Few roots remain attached to the bulbs after grading and storing. The eelworms are very susceptible to desiccation. No viable worms were found in the root systems of infected bulbs which had been planted in nematode-free soil after the six-week grading and drying period. Soil fumigation with D-D at 50 gallons per acre and ethylene dibromide at 10 gallons per acre increased the yield of No. 1 bulbs four to five times that of the controls. *Leucojum* (Amaryllidaceae) is a new addition to the list of bulb host plants for *Pratylenchus*.

R.T.L.

(247c) Gall indices of *Meloidogyne* species on the roots of Rowan, Korean and Kobe lespedeza showed that Rowan was highly resistant, although not immune, to *M. incognita* and *M. incognita* var. *acrita* but was susceptible to *M. arenaria*, *M. hapla* and *M. javanica*, while Korean and Kobe were susceptible to all these species.

R.T.L.

(247d) In central east Georgia root samples and surrounding soil from peanuts with severe chlorosis contained *Pratylenchus* sp., *Helicotylenchus* sp. and great numbers of *Criconeimoides*. Although other factors may have been involved it was concluded that *Criconeimoides* showed a major association with peanut “yellows”.

R.T.L.

(247e) Two experimental plots on well decomposed Everglades peat artificially infected with *Meloidogyne incognita* in the chopped roots of beans and squash and planted with rice seedlings were irrigated intermittently with sprinklers. One plot was then flooded to a depth of four inches, the other was grown as under upland culture without flooding. The rice on both plots matured normally. After the rice stubble had been pulled the plots were planted with Pascal celery followed by a second planting with Black Valentine beans and a third with Pascal celery. The root infestation index after each planting is tabulated. The tables show that flooding greatly reduced infection and suggest that a rice-vegetable rotation may be a practical means of reducing field infestations of root-knot on peat soils.

R.T.L.

(247f) The authors tested several methods of applying D-D mixture to soil to control *Meloidogyne incognita* var. *acrita* on cotton in the San Joaquin Valley, where it is a serious problem, in order to find a less costly method than the standard one of injecting 20 gal. per acre of D-D on the flat seed-bed. Applications were made in the rows with one chisel in the centre, or with two chisels 9 in. apart, to a depth of 13 in. Dosages were 3.9 to 12 gal. per acre in the rows two weeks before planting, 3.4 to 12.7 gal. per acre in the rows at planting and 20 gal. per acre on the flat four weeks before planting. Observations were made on stand yield and root-knot index. The stand showed no correlation with treatment. The yield was increased with all treatments, the increase in the value of the crop being sufficient to pay for the fumigation: the greatest increase was after the flat treatment. There was most reduction in root-knot index after treatment on the flat but the row treatment gave sufficient reduction to allow satisfactory growth of the plants.

M.T.F.

(247g) Raski & Hart describe the occurrence of diseased patches on private lawns in California where white clover was heavily parasitized by *Heterodera*. On grounds of morphology and host range it is considered to be *H. trifolii* (Goffart, 1932). In a number of host tests no males were found. Heavily infested with females were *Trifolium repens*, *T. repens* var. *latum*, *Dianthus caryophyllus*, *Phaseolus vulgaris*, *Rumex crispus* and *Sesbania macrocarpa*. *Trifolium pratense* was lightly infested and *T. fragiferum* and *Pisum sativum* very lightly. No infestation was found on beets, *Trifolium hybridum*, *T. subterraneum*, *Medicago sativa*, *M. hispida*, *Melilotus officinalis* and *Lotus* sp.

M.T.F.

(247h) About 5% of the potato tubers grown in a small plantation on Vancouver Island were found to have a greyish rot similar to that caused by *Ditylenchus destructor*. Bulbous iris of the variety Wedgewood had previously been grown on this land and were known to have been infected with *Ditylenchus dipsaci* but the present potato infection is tentatively identified as *D. destructor*. This is the first record of this nematode from the field in British Columbia.

R.T.L.

(247i) Steiner discusses various aspects of the relationship between nematodes and plants in which he observes changes. The first of these, "the concept of the taxon", is changing in that with more detailed knowledge of the morphology of certain species it has become possible to identify several species comprised in what was formerly thought to be a single one. The concept of parasitism is broadening as more becomes known of the relationships between nematodes and plants. It is becoming known that plants may be attacked by several species of nematode simultaneously and that the so-called saprobic nematodes may carry and distribute bacteria and fungus spores and so may not be wholly non-pathogenic. The spread of nematodes harmful to one group of plants may occur in material carried on quite other plants or materials. Soil-borne plant diseases are said to be sometimes complex in character and nematodes may be members of the complex.

M.T.F.

(247j) Tarjan & Hopper grew tomato seedlings inoculated with *Meloidogyne incognita* in 4 groups: (i) in normal daylight at an average temperature of 66°F., (ii) in normal daylight at an average of 81.8°F., (iii) illuminated to give 16 hours light per 24 hours at 66°F., (iv) 16 hours illumination at 81.8°F. After 7 weeks they estimated the numbers of females and egg masses per plant. They found greater numbers of both at the higher temperature and also a greater proportion of egg masses to females, indicating more rapid maturing at the higher temperature. At 82°F. the increased photoperiod caused a significant increase in reproduction, but not so at 66°F. The rate of maturing was not affected by photoperiod at either temperature. It is concluded that for the production of an abundant supply of egg masses infested plants should be grown at high temperatures under an increased photoperiod.

M.T.F.

(247k) Tarjan has examined females of *Meloidogyne* from 28 plant samples from Israel and has identified them by means of the anal plate patterns and measurements of head structures. In 22 samples the parasite was *M. javanica*, in 3 it was *M. incognita*, in 2 *M. arenaria*.

and in one *M. hapla*. In one case the anal plate pattern did not agree with any known species and the specimens are being further studied. The host plants are mostly cultivated plants and a few common weeds and came from a number of different places in Israel. M.T.F.

(247l) In this progress report preliminary observations by A. L. Taylor are cited. *Lycopersicon hirsutum*, *L. hirsutum* var. *glabratum*, *L. peruvianum* and *L. glandulosum* had a high order of resistance to *Meloidogyne* infection. Of these *L. peruvianum* had the greatest resistance. *L. pimpinellifolium* and crosses of this species with *L. esculentum* had very little resistance while *L. hirsutum* var. *glabratum* was resistant only to *M. arenaria*. R.T.L.

(247m) Bazán de Segura states that E. García Pittman has found *Heterodera rostochiensis* in the following new hosts in Puno y Cuzco (South Peruvian Andes), viz., *Ullucus tuberosus*, *Oxalis tuberosa* and *Chenopodium apulifolium*; and in Huancayo (Central Peruvian Andes) *Solanum goniocalyx* and *Chenopodium quinoa*. 685 old but viable cysts of *H. rostochiensis* were obtained from 20 soil samples of 20 gm. each from a field in Huancayo not very heavily infested. R.T.L.

248—Plant Pathology. London.

- a. STANILAND, L. N., 1953.—“Hot-water treatment of strawberry runners.” 2 (2), 44-48.
- b. BROWN, E. B., 1953.—“Stem eelworm in lucerne.” 2 (2), 54.
- c. PETERS, B. G., 1953.—“Trial of ammoniacal gas liquor against potato root eelworm.” 2 (2), 65-67.

(248a) Satisfactory control of stem eelworm (*Ditylenchus dipsaci*) in strawberry has been achieved by immersion of washed runner plants in water at 115°F. for 7 minutes followed by dipping in cold water. *Aphelenchoides* species are not completely controlled but it is probable that treatment for 10 minutes would be satisfactory. Staniland describes the apparatus required and states that stocks of 7 varieties of strawberry have been treated at different dates between 12th August and 20th October, in all cases resulting in good control of stem eelworm and no serious effects on the plants except when planting conditions were unsatisfactory. M.T.F.

(248b) Brown reports and figures occurrences of a race of *Ditylenchus dipsaci* attacking lucerne. The first record in Great Britain was in 1948 since when several other cases have come to light. Plants are dwarfed, stunted and the petioles swollen. Spreading patches occur in the fields and the evidence from their distribution and the previous histories of the fields suggests that infestations originated with the seed. J.B.G.

(248c) Using pots holding 20 lb. of soil naturally infested with *Heterodera rostochiensis*, Peters has investigated the effects of drenching with ammoniacal gas liquor at 100 and 500 ml. The high dose, corresponding to about 9,000 gal. per acre, led in 4 weeks to 35% kill of eelworm larvae, a large increase in weight and size of tubers formed on subsequently planted potatoes, and at the end of the season a recovery of larvae per gm. of soil to 3½ times their density in the controls. He suggests that it would be unwise to use this liquor as a source of nitrogen for potatoes on eelworm-infested land. B.G.P.

249—Proceedings. Association of Southern Agricultural Workers.

- a. ANDREWS, J. S., JONES, D. J. & SIPPEL, W. L., 1953.—“Some cases of clinical parasitism in cattle in Georgia.” [Abstract.] 50th Annual Convention (1953), p. 78.
- b. VEGORS, H. H., SELL, O. E., BAIRD, D. M. & STEWART, T. B., 1953.—“Internal parasitism of beef calves on three kinds of winter pastures.” [Abstract.] 50th Annual Convention (1953), p. 79.
- c. DEAN, J. L. & STRUBLE, F. B., 1953.—“Resistance and susceptibility to root-knot nematodes in tomato and sweet potato.” [Abstract.] 50th Annual Convention (1953), pp. 156-157.
- d. BIRCHFIELD, W., 1953.—“Parasitic nematodes associated with diseased roots of sugarcane.” [Abstract.] 50th Annual Convention (1953), p. 157.
- e. PERRY, V. G. & SWANK, Jr., G., 1953.—“Some celery seedbed diseases of central Florida and their control with certain chemicals.” [Abstract.] 50th Annual Convention (1953), p. 157.
- f. NEWSOM, L. D. & MARTIN, W. J., 1953.—“The effects of soil fumigation on populations of parasitic nematodes, incident of Fusarium wilt and yield of cotton.” [Abstract.] 50th Annual Convention (1953), p. 158.

- g. MARTIN, W. J., 1953.—“Reaction of the Deltapine 15 variety of cotton to different isolates of *Meloidogyne*.” [Abstract.] 50th Annual Convention (1953), p. 158.
- h. HOLDEMAN, Q. L. & GRAHAM, T. W., 1953.—“Population trends of the sting nematode under different crops in greenhouse pot culture.” [Abstract.] 50th Annual Convention (1953), pp. 158–159.

(249a) Worm egg counts of the faeces of 7 extremely weak and emaciated cattle in Georgia ranged from none to 4,800 per gram; yet at post-mortem the average number of parasites collected per animal was 154,661, varying from 40,950 to 568,000. The total of 40,950 was made up as follows: *Cooperia punctata* 25,800, *Trichostrongylus axei* 7,300, *Ostertagia ostertagi* 6,900, *Oesophagostomum radiatum* 750, and *Bunostomum phlebotomum* 200. Out of the total 568,000 *Ostertagia ostertagi* accounted for 532,500, *T. axei* for 29,250 and *C. punctata* for 6,250, plus hundreds of fourth-stage larvae of *Oesophagostomum radiatum* in the mucosa of the large intestine. These results show that examination of faeces may give an unsatisfactory result as many thousands of immature nematodes may be present.

R.T.L.

(249b) Yearling Hereford cattle were grazed on two paddocks of each of three types of winter pasture, viz., (i) temporary (rye grass, oats and crimson clover), (ii) fescue-white clover, and (iii) crimson clover. Those on one set of paddocks were given a corn [maize] supplement, those on the other had no supplement. The cattle on the fescue pastures were the most heavily parasitized. The chief parasites were *Ostertagia ostertagi*, *Trichostrongylus axei*, *Cooperia punctata* and *C. oncophora*. Those without maize supplement had more worms and many more larvae than those which received the grain supplements. The average worm load of those on fescue pasture only was 107,861. Their average daily gain in weight was only 1.13 lb. They had rough hair coats and diarrhoea. The calves on fescue with supplementary grain had an average of only 36,119 worms and a daily average gain of 2.08 lb. The low weight gain and excessively high parasite loads of the calves on fescue without grain is apparently correlated with its low nutritive value. The number of parasites of the calves on the temporary and crimson clover pastures, with supplementary grain, was reduced but the rate of weight gain was not increased. This indicates that these pastures provided a satisfactory plane of nutrition.

R.T.L.

(249c) [This abstract appears also in *Phytopathology*, 1953, 43, 290. For abstract see *Helm. Abs.*, 22, No. 122e.]

(249d) [This abstract appears also in *Phytopathology*, 1953, 43, 289. For abstract see *Helm. Abs.*, 22, No. 122d.]

(249e) [This abstract appears also in *Phytopathology*, 1953, 43, 293. For abstract see *Helm. Abs.*, 22, No. 122j.]

(249f) [This abstract appears also in *Phytopathology*, 1953, 43, 292–293. For abstract see *Helm. Abs.*, 22, No. 122i.]

(249g) [This abstract appears also in *Phytopathology*, 1953, 43, 292. For abstract see *Helm. Abs.*, 22, No. 122h.]

(249h) [This abstract appears also in *Phytopathology*, 1953, 43, 291. For abstract see *Helm. Abs.*, 22, No. 122g.]

250—Proceedings of the Society for Experimental Biology and Medicine.

- a. OLIVER-GONZÁLEZ, J., 1953.—“*In vivo* inhibition of blood agglutinins by polysaccharides from animal parasites.” 82 (4), 559–561.

(250a) Oliver-González injected monkeys and rabbits with polysaccharides prepared from *Trichinella spiralis* larvae and *Ascaris lumbricoides*. The titres of the agglutinins in the sera detected at 37°C. against human erythrocytes of Group A₂ were reduced to negative for a period of 24 hours, and remained low for a period of 96 hours. The titre of agglutinins against Group A₁ erythrocytes was not decreased to the same extent. The titre of agglutinins acting at 6°C. against A₁, A₂ human, sheep and the animals own erythrocytes were also reduced after injecting the polysaccharides.

W.P.R.

251—Public Health. Johannesburg.

- a. PITCHFORD, R. J., 1953.—“Bilharzia and its control in relation to waters of the northern and eastern Transvaal Lowveld.” **17** (4), 339–341, 345.

(251a) The incidence of urinary schistosome infection among the natives throughout the Lowveld in eastern and northern Transvaal, except in isolated pockets, is 60%–80%; that of intestinal schistosomiasis is 60%–70% in the natives on all European farming areas, except on White River and Blyde River where it is only 2%. In the Native Reserve areas the incidence is from 7%–35%. On the large rivers such as Letaba and Crocodile the incidence of urinary and intestinal schistosome infections is low owing to the large volume of water, the small number and very low percentage of infected snails and the high mortality in snails during floods. Mass treatment is quite useless unless combined with an all-out snail control programme. Centrifugal pumps allow adult snails to pass without damage (unless the delivery is covered with a mosquito wire netting bag) but the eggs and young will almost certainly be killed if the pressure in the pump is sufficiently high. Ram pumps kill the eggs and young and the adults can be excluded by the sieve where the water enters the rams. R.T.L.

252—Publications. Department of Agriculture, Canada.

- a. ANON., 1953.—“Prevention of disease in sheep (including control of internal and external parasites).” No. 893, 8 pp. [Revised.]

253—Recueil de Médecine Vétérinaire.

- a. THIERY, G., 1953.—“Un parasite méconnu du chat: *Metorchis albidus*.” **129** (6), 356–358.

(253a) *Metorchis albidus* was present in the bile ducts of about a third of the cats examined at Alfort, France, but only when the bile was normal. Abnormalities of the hepatic cells, provided that they did not affect the bile, did not appear to influence the presence of the parasite. The infected cats came from several well defined districts; the intermediate host was not found. P.M.B.

254—Revista de Agricultura. São Paulo.

- a. LORDELLO, L. G. E., 1953.—“Nota prévia sobre um nematódeo encontrado associado à uma moléstia das folhas do morangueiro.” **28** (3/4), 130–131. [English summary p. 131.]

(254a) Lordello has found *Procephalobus mycophilus* for the first time in Brazil where it was associated with a disease of strawberries caused by the fungus *Mycosphaerella fragariae*. A species of *Aphelenchoides* was also obtained from the leaves. M.T.F.

255—Revue de Médecine Vétérinaire.

- a. SANTUCCI, J., SENDRAL, R. & HAAG, J., 1953.—“Présence de la tétramérose, chez le pigeon, au Maroc.” **104**, 335–337.

(255a) At Rabat, French Morocco, a frequent cause of death in domestic pigeons was found to be a species of *Tetrameres*, probably *T. fissispina* or *T. confusa*. Treatment with phenothiazine was ineffective. The intermediate host could not be traced. P.M.B.

256—Revue Romande d'Agriculture, de Viticulture et d'Arboriculture.

- a. SAVARY, A., 1953.—“Maladie du coeur ou maladie vermiculaire de la betterave?” **9** (8), 64–65.

(256a) Savary distinguishes between heart-rot caused by *Phoma betae* and eelworm disease of sugar beet. He briefly describes the symptoms produced by *Ditylenchus* sp. in beet and suggests that the only measure to control the disease is the practice of rotation. J.B.G.

257—Rhodesian Tobacco Journal.

- a. MARTIN, G. C., 1953.—“The eelworm problem. 1. Life cycle of the root knot nematode.” 5 (3), 61–65, 67–70.
- b. MARTIN, G. C., 1953.—“The eelworm problem. 2. Nematode hosts and habits.” 5 (4), 71–75.
- c. MARTIN, G. C., 1953.—“The eelworm problem. 3. Control by chemical methods.” 5 (5), 61, 63–65, 67–68, 71–73, 75, 77.
- d. MARTIN, G. C., 1953.—“The eelworm problem. 4. Chemical and cultural control.” 5 (6), 67, 69–77.
- e. MARTIN, G. C., 1953.—“The eelworm problem. 5. Chemical control in seedbeds and lands.” 5 (7), 65–67, 69–70.

(257a, b, c, d, e) This series of articles presents to tobacco planters and farmers concerned with the production of crops which are susceptible to eelworm an illustrated account of the life-cycle of root-knot eelworms and of the problems of their control.

R.T.

258—Rivista di Parassitologia.

- a. RICCI, M., 1953.—“Ricerche parassitologiche nell'Isola d'Ischia. V.—Ancora sulla diffusione della ossiurosi nella popolazione infantile.” 14 (3), 171–179. [English summary p. 179.]
- b. DEIANA, S., 1953.—“Bronco-polmonite da *Schistosoma bovis* (Sonsino, 1876) nei ruminanti (Rilievi anatomo- ed istopatologici.)” 14 (3), 181–190. [English summary p. 190.]

(258a) Ricci examined by the Scotch cellophane tape technique 610 children between 6 and 12 years of age on the island of Ischia, and concludes that the maximum frequency of *Enterobius* is at the beginning of the summer and the minimum at the end. This cyclical behaviour was present in the boys only.

R.T.I.

(258b) The macro- and micropathology of pulmonary invasion by *Schistosoma bovis* in cattle and sheep in Sardinia is described and illustrated by photomicrographs.

R.T.I.

259—Schweizerische Medizinische Wochenschrift.

- a. TRINCÃO, C., GOUVEIA, E., FRANCO, A. & PARREIRA, F., 1953.—“L'ionisation du fer par le suc gastrique dans l'anémie de l'ankylostomiasse.” 83 (4), 81.

(259a) In nine hookworm patients the gastric juice ionized an average of 106.9% of reduced iron, compared with 200% in normal cases. This corresponds with the findings of other authors and with the good results obtained by treatment with reduced iron.

P.M.B.

260—Scottish Agriculture.

- a. THOMLINSON, J. R., 1953.—“Disease among Border sheep. A further survey in the Sourhope district—Part I.” 33 (2), 78–83.

(260a) On four hirsels of Sourhope, a sheep farm of 2,340 acres ranging in altitude from 750 ft. to 1,985 ft. in the Cheviot Hills on the Scottish border, the egg counts per gram of faeces and the body weight of hoggs were recorded monthly and are tabulated. The worms most commonly present in pathogenic numbers in adult sheep at post-mortem were *Trichostrongylus axei* and *Ostertagia circumcincta*. The cause of death in 21 out of 26 sheep was ascribed to poor bodily condition and severe stomach and intestinal infection with worms.

R.T.L.

261—South African Medical Journal.

- a. GELFAND, M. & HONEY, R. M., 1953.—“Bilharzial dilatation of the ureter. A report on three cases.” 27 (16), 326–329.
- b. KISNER, C. D., STÖFFBERG, N. & DE MEILLON, B., 1953.—“Human infection with *Bilharzia bovis*.” 27 (18), 357–358.

(261b) In the northern watershed of Witwatersrand 40% of the *Physopsis* shed, at certain times, cercariae from which *Schistosoma bovis* have been produced in mice and monkeys but in a survey of peri-urban European and Bantu schoolchildren, only one instance of human urinary infection due to *S. bovis* was detected. The case was that of a European schoolboy, 13 years old, who had lived in the Ferndale area for the past three years. Oral treatment with miracid-D in doses of 400 mg. thrice daily for three days followed by 200 mg. thrice daily for

three days was successful. An eosinophilia of 23.5% dropped to 8% and the urine examinations became negative.

R.T.L.

262—Southern Seedsman.

- a. CORDNER, H. B. & WESTER, R. E., 1953.—“Long breeding program promises nematode-resistant baby lima beans.” **16** (2), 30, 46, 57.
- b. ANON., 1953.—“Nematode-resistant sweet potato ready.” **16** (6), 36.

(262a) This is an account of the breeding and selection carried out since 1940 with bush lima beans for the development of suitable strains resistant to root-knot nematode. Resistant lines are now being rapidly increased for distribution.

M.T.F.

(262b) “Okla. 46”, a Jersey-type sweet potato resistant to nematodes is now available in States north and east of Oklahoma.

M.T.F.

263—Sovetskaya Meditsina.

- a. IVANOVA, N. S., 1953.—[Case of renal echinococcosis.] **17** (1), 36–37. [In Russian.]
- b. DZHANDZHUGAZOV, A. G., 1953.—[Cases of renal echinococcosis.] **17** (1), 37. [In Russian.]
- c. MANEVICH, I. A., 1953.—[A case of rupture of an echinococcal cyst of the spleen.] **17** (1), 38. [In Russian.]

264—Svensk Frötidning.

- a. BINGEFORS, S., 1953.—“Nematodproblem i amerikansk växtodling.” **22** (8), 74–78.

(264a) Binge-fors gives a review of important plant-parasitic nematodes in American agriculture. Special attention is given to the control of the nematodes with chemicals, rotations or breeding for resistance.

S.B.

265—Tidsskrift for Planteavl.

- a. BOVIEN, P., 1953.—“Om havreålen (*Heterodera major*) og resultaterne af nogle forsøg på smittet jord.” **56** (4), 581–591. [English summary pp. 589–590.]
- b. BOVIEN, P. & LINDHARDT, K., 1953.—“Kartoffelålen forekomst i Danmark. Undersøgelser 1950–51.” **56** (4), 592–600. [English summary pp. 599–600.]

(265a) Bovien reviews the occurrence in Denmark of *Heterodera* spp. with lemon-shaped cysts and makes new observations on the structure of the vulval region in cysts of *H. major*. He states that there is at present no reliable means of distinguishing cysts of this species from those of *H. schachtii* in routine work. Thirteen species of fodder grasses were grown for 2 years in soil infested with cereal-root eelworm. All were attacked to varying degrees; some are newly recorded hosts; none appeared to suffer damage. In another field trial oats, barley, mangolds, timothy and ryegrass were grown for 3 years in infested soil. Oats were sown on all plots in the fourth year and the numbers of white cysts formed on the roots were counted. The heaviest infestation occurred after oats and barley and the lightest after mangolds: cyst counts were higher after ryegrass than after timothy.

M.T.F.

(265b) This is an account of the distribution of potato-root eelworm in Denmark and a report of sampling procedure and results obtained in 1950–51. Of a total of 24,750 samples examined only 53 contained cysts and in 10 of these samples the cysts were empty.

M.T.F.

266—Tierärztliche Umschau.

- a. HIERONYMI, E., 1953.—“Zur Entwicklung von *Aelurostrongylus abstrusus* (Railliet 1898) in der Katzenlunge.” **8** (13/14), 230–232.
- b. STEINGRIMSSON, B., 1953.—“Beobachtungen über die Lungenwurmseuche und Adenomatose der Schafe in Island.” **8** (15/16), 284–285.

(266a) A histopathological study of the lung of a cat infected with *Aelurostrongylus abstrusus* revealed eggs and larvae in the alveolar spaces only (together with alveolar epithelium,

granulocytes and histiocytes), and not in the arterioles as described by Cameron or in the capillaries as reported by Baudet and Railliet. The lung changes now described are more severe than those found by Cameron; no healing processes were observed. In view of the relative size of the eggs and the diameter of the capillaries it is not considered possible for development of the eggs to take place there without rupturing the capillaries, a condition which has not been convincingly demonstrated. The bronchitis and peribronchitis and the pneumonic changes of the lung area of a desquamative, granulocytic and interstitial character may be explained by secondary infection. P.M.I.

(266b) In the treatment of lungworm infections in sheep in eastern Iceland good results were obtained with intratracheal injections of Antimosan-Prontosil solution, even in emaciated animals in which the infection was far advanced. A mixture of creosote, chloroform, turpentine oil and olive oil was also effective but requires very careful administration. Steingrimsso considers that the lung tumours found in sheep in various parts of Iceland and described as adenomatosis may be associated with lungworm infections. P.M.E.

267—Tijdschrift over Plantenziekten.

- a. KUIPER, J., 1953.—“Waarnemingen betreffende *Ditylenchus radicolica* (Greeff, 1872) Filipjev, 1936.” 59 (4), 143–148. [English summary pp. 147–148.]
- b. OOSTENBRINK, M., 1953.—“*Ditylenchus radicolica* (Greeff, 1872) Filipjev, 1936, een wortelaaltje in het Nederlandse grasland.” 59 (4), 149–152. [English summary pp. 151–152.]
- c. OOSTENBRINK, M., 1953.—“A note on *Paratylenchus* in the Netherlands with the description of *P. goodeyi* n.sp. (Nematoda, Criconeematidae).” 59 (5), 207–216.

(267a) In a study of the biology of *Ditylenchus radicolica* in Dutch meadows, it was found that the roots of Graminae showed spiral-shaped galls containing up to 60 adult worms with thousands of eggs and larvae in each. At temperatures around 17°C. in water young larvae hatch from whole galls. Hatching was not stimulated by root exudate. The first-stage larva is infective and penetrates young roots and young galls. It can withstand desiccation for two months and immersion in a solution of an organic mercury compound. That the species of host plant influences the number and size of the galls is indicated by a graph contrasting the infections in *Poa trivialis* and *P. pratensis* from the same soil. *D. radicolica* has so far been found only in grasses in Holland and damage has not yet been reported but experimental inoculations showed that rye, wheat, barley and oats were also susceptible. Seventeen plant species are known in various countries to be natural hosts. *Avena sativa*, *Arrhenaterum elatius* and *Deschampsia flexuosa* were only found susceptible in inoculation trials. R.T.L.

(267b) A map indicates the wide distribution of *Ditylenchus radicolica* in old meadows in the Netherlands since 1950. Eleven grass varieties were attacked under natural conditions viz., *Lolium perenne*, *Phleum pratense*, *Poa pratensis*, *Poa annua*, *Agrostis stolonifera* (= *A. alba*), *A. tenuis*, *Festuca pratensis*, *Poa trivialis*, *Holcus lanatus*, *Anthoxanthum odoratum* and *Alopecurus geniculatus*. The last seven are new hosts. R.T.L.

(267c) Oostenbrink discusses the genus *Paratylenchus* pointing out that the synonymy of the type species *P. macrophallus*, as redescribed by T. Goodey in 1934, has gone too far. He suggests that Goodey had a mixture of species, a view which fits in with his own findings in Dutch collections. He describes and figures a new species *Paratylenchus goodeyi* n.sp. Of the various types he has found in Holland none fit the original *P. macrophallus* (de Man, 1880) and he doubts whether he encountered this species in his work. J.B.G.

268—Transactions of the Royal Society of Tropical Medicine and Hygiene.

- a. AITKEN, W. J. & ROY, K. P., 1953.—“The eosinophilic syndrome. An epidemiological study.” 47 (5), 418–424.
- b. TALAAT, S. M., 1953.—“The intensive treatment of schistosomiasis with sodium antimony tartrate. A report on 200 cases.” 47 (5), 425–427.

- c. NEWSOME, J., 1953.—“Experiments with some miracid, acridine, and diamidine compounds on *Schistosoma mansoni* infections in baboons.” 47 (5), 428-430.
- d. THOMSON, F. A., 1953.—“Transverse myelitis due to ova of *Schistosoma mansoni*.” [Correspondence.] 47 (5), 438.

(268a) From a study of 200 cases of eosinophilia in a tea garden in North Bengal it is concluded that the syndrome known as “tropical eosinophilia” is an infectious disease probably caused by a filterable virus, that allergy plays little or no part in its causation and that the infection may be conveyed by faecal or droplet contamination. The term “tropical” is not justifiable as the disease probably also occurs in temperate climates. R.T.L.

(268b) Talaat has varied the intensive treatment of urinary schistosomiasis by injecting grains of sodium antimony tartrate, dissolved in 20 c.c. of 5% glucose, twice (with an interval of six hours) on two successive days and once on the third day. Three months later the urine from 200 cases so treated showed no eggs in 94.5%, dead eggs in 5% and living eggs in only 0.5%. In some cases urticaria, angioneurotic oedema and papular rashes followed the second and third injection. These toxic-allergic reactions were easily controlled or prevented by neotergan 0.16 gm. thrice daily or phenergan 25 mg. thrice daily during the course of treatment and for three days thereafter. When the sodium antimony tartrate was given in 10 c.c. of 1% solution the nausea, vomiting and coughing were inhibited and the allergic reactions, especially the bronchial spasm, were averted. R.T.L.

(268c) A new miracid derivative, 27T51, with the formula 9-thio-1-azo-5-β-diethylaminoethylamino-8-methylanthrone hydrochloride, which has the same order of toxicity and activity as miracid-D in mice, was tested on baboons experimentally infected with *Schistosoma mansoni*; it proved at least as active as miracid-D salicylate and is worth investigating further. The acridines 5-aminoacridine, 5-butyl- and 5-heptylaminoacridine were found to be active against adult *S. mansoni* in vitro but the necessary level of concentration in the blood could not be maintained: “Rivanol” had no demonstrable effect on two infected baboons. Hexamidine the maximum dosage given for pentamidine also appeared to be ineffective. R.T.L.

(268d) An adult African in the Choma hospital, Northern Rhodesia, had spastic paralysis of both legs which prevented him from walking. There were *Schistosoma mansoni* eggs in his feces. After a single course of intravenous antimony the patient was able to walk home. R.T.L.

59—United States Armed Forces Medical Journal.

- a. ETTER, L. E. & CROSS, L. C., 1953.—“Roentgenographic signs of intestinal parasitic infestation. A case report.” 4 (4), 599-601.

70—University of California Publications in Zoology.

- a. VOGEL, M. & DAVIS, B. S., 1953.—“Studies on the cestode genus *Anonchotaenia* (Dilepididae, Paruterinae) and related forms.” 59 (1), 1-29.

(270a) From a study of six different anonchotaeniids the species of the genus *Anonchotaenia* appear to fall into two distinct groups, one with paruterine organs anterolateral to a single uterus, the other with these organs directly anterior to a divided uterus. Three new species are described from birds in Mexico, viz., *Anonchotaenia mexicana* n.sp. from *Carpodacus mexicanus* and *Pipilo erythrophthalmus* in Mexico which may however be conspecific with *A. quiscalis*, *Anomaloporus hesperiphonae* n.g., n.sp. from *Hesperiphona abeillei* and *A. lambi* n.sp. from *Streptoprocne semicollaris*. The affinities between *Anomaloporus* and *Anonchotaenia* are discussed. *Anomaloporus* possesses a well developed paruterine organ. Few host records are given for *Anonchotaenia brasiliense* from *Loxops virens*, *Himatione sanguinea* and *Estiaria coccinea*, *A. globata* from *Melazone kieneri*, *A. longiovata* from *Pipilo aberti*, *Anonchotaenia* sp. from *Aimophila rufescens* and *Anonchotaenia* sp. from *Atlapetes torquatus*. Data of measurements of these species are tabulated. R.T.L.

271—Veterinarski Arhiv.

- a. RICHTER, S., VRAŽIĆ, O. & ALERAJ, Z., 1953.—“Filoftalmoza domaće guske.” 23 (193–205. [English & German summaries pp. 201–205.]

(271a) *Philophthalmus posaviniensis* n.sp. from the eye of domestic geese in Yugoslavia differs from *P. nocturnus* by the presence of spines on the cuticle, the length of the oesophagus and the extension of the vitellaria to the posterior edge of the seminal vesicle. *P. cupensis* n.sp. from the same host, is distinguished from *P. nyrocae* by the elongation of the body, the position and position of the ventral sucker and of the seminal vesicle, the presence of small spines on the cirrus and by the lack of subcuticular muscle fibres. The infection, which caused oedema of the nictitating membrane and inflammation of the conjunctiva and resulted in poor growth of the birds, was successfully treated with drops of 2% formalin “between the conjunctiva and below the membrana nictitans”. When mature specimens were transferred to the intestines of healthy geese the symptoms were more severe than those resulting from natural infection. Also recorded in geese in Yugoslavia are *Paramonostomum alveatum* from the large intestine and *Prosthogonimus cuneatus* from the bursa Fabricii and unidentified Cyclocoelidae from the suborbital sinuses.

P.M.

272—Veterinary Medicine.

- a. ALLEN, R. W. & JACKSON, P. K., 1953.—“Evaluation of di-phenthane-70 in removing fringed tapeworms from sheep.” 48 (9), 352–354.
b. BURCH, G. R. & EHRENFORD, F. A., 1953.—“Canine strongyloidiasis.” 48 (10), 417–418.

(272a) Drenching of sheep infected with the fringed tapeworm (*Thysanosoma actinoides*) with a 15% suspension of di-phenthane-70 proved decidedly erratic although it had some effect in removing the tapeworms.

R.T.

(272b) The following therapeutic agents were used unsuccessfully in 12 cases of canine strongyloidiasis: Vetatycin (erythromycin), Nikophen (a mixture of nicotine, phenothiazine and di-phenthane-70), enseals, gentian violet, phenothiazine, Vermiplex, PVP iodine, Caricidin and terramycin. For diagnosis the 33% zinc sulphate flotation technique is recommended.

P.M.

273—Veterinary Record.

- a. ANON., 1953.—“Incidence of *C. bovis* infestation in Dorset cattle.” 65 (37), 592.
b. HAMILTON, A. H. A., 1953.—“Tetrachlorethylene.” [Correspondence.] 65 (37), 600.
c. ANTHONY, D. J., 1953.—“Parasitic infestation of meat.” [Correspondence.] 65 (37), 608–609.
d. ANON., 1953.—“Ascarids in the bile duct of pigs.” [Questions & Answers.] 65 (38), 608–609.
e. STABLEFORTH, A. W., 1953.—“Recent advances at Weybridge.” 65 (44), 709–710. [Discussion pp. 715–722.]

(273a) In the Annual Report of the Medical Officer for Dorset, the Assistant County Sanitary Officer states that 91 cases of *Cysticercus bovis* in cattle were notified in 1952 compared with 56 in 1951 and 27 in 1950.

R.T.

(273b) Having previously used tetrachlorethylene with success for ancylostomiasis in dogs, Hamilton now reports a case which showed alarming symptoms of incoordination, restlessness and panting.

R.T.

(273c) Anthony wonders how long it will be before a special inspection service for trichinosis and measly pork may have to be instituted in British abattoirs because of the importation of Scandinavian Landrace pigs to improve local breeds.

R.T.

(273e) This summary of the more important researches recently carried out at the Ministry of Agriculture's Veterinary Laboratory at Weybridge includes brief notes on work on parasitic bronchitis, parasitic gastritis, resistance to strongyle infections and fascioliasis.

R.T.

274—Vida Agrícola. Lima.

- *a. RAKOWER, M., 1953.—“La hidatidosis como problema de salud pública.” 30, 223, 225, 227-228.

275—Virginia Medical Monthly.

- a. GAHAGAN, R. B. & BECKWITH, J. R., 1953.—“Trichinosis. A case report.” 80 (3), 165-167.

276—West Indian Medical Journal.

- a. MARKOWSKI, B., 1953.—“Appendicular obstruction by *Ascaris lumbricoides*. A case report.” 2 (1), 85-86.

277—Wiener Tierärztliche Monatsschrift.

- a. SUPPERER, R., 1953.—“Filariosen der Pferde in Österreich.” 40 (4), 193-220. [English, French & Italian summaries pp. 217-218.]

(277a) In Austria about 80% of the horse population is infected with *Onchocerca cervicalis* and about 8.64% with *O. reticulata*. A third species, inhabiting the walls of the arteries and veins of the extremities and previously considered identical with *O. reticulata*, belongs to the genus *Elaeophora* and is named *E. böhmi* n.sp. It occurs in about 6.2% of the horses in Austria. The morphology of the adults and microfilariae of each of these three species is described and figured and their pathogenic significance is discussed. The specific differentiation of *E. böhmi* from *E. poeli* and *E. schneideri* depends apparently on the differences in measurements which are presented in tabular form. A key is also provided for the recognition of the microfilariae of *Setaria equina*, *Parafilaria multipapillosa*, *O. cervicalis*, *O. reticulata* and *Elaeophora böhmi*.
R.T.L.

278—World Health Organization. Technical Report Series.

- a. ANON., 1953.—“Expert Committee on Bilharziasis. First Report.” No. 65, 45 pp. [Also in French edition.]

(278a) This report on schistosomiasis covers (i) surveys on the geographical distribution in Africa, (ii) critical analysis of methods of diagnosis with special reference to their applicability, (iii) epidemiology, (iv) standard procedures for epidemiological surveys, (v) control methods, (vi) disease caused by *S. japonicum*. The Expert Committee considered that attempts to control schistosomiasis solely by the treatment of infected human beings are not likely to be effective. Budgets devoted only to mass treatment could be spent more profitably on other aspects of control.
R.T.L.

279—World's Poultry Science Journal.

- a. REID, W. M., 1953.—“Parasite problems of standard breeds of poultry in Egypt.” 9 (2), 97-101.

(279a) In Egypt, *Ascaridia galli* is by far the most prevalent internal parasite of poultry. In some localities the incidence is 100% but it appears that it is absent in the oasis of Siwa. This is due not to isolation, for poultry are frequently taken into the oasis, but probably to the dryness which inhibits the development of the eggs. In the Nile Valley, the irrigation, the custom of sprinkling the pens to lay the dust, and the damp patches around watering devices provide ideal conditions for egg development. Reid calculates that in the 16 million Egyptian fowls *A. galli* alone consumes 90 tons of useful carbohydrate annually. Tapeworms are also very common. Their carbohydrate consumption rate is higher and is estimated to result in the loss of 175 tons annually.
R.T.L.

280—Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz

- a. GOFFART, H., 1953.—“Über das Vorkommen von *Heterodera punctata* Thorne, 1945 [192] (Nematodes) in Deutschland und im Ausland.” 60 (4), 166–167.

(280a) Goffart has found cysts of *Heterodera punctata* in soil samples from several parts of West Germany, especially from old grassland. The cysts measure 0.4–0.7 mm. by 0.3–0.4 mm., eggs $103\mu \times 45\mu$ and larvae 357μ – 451μ in length. A characteristic of the larvae is the forwardly directed points of the stylet base. An account is given of other published work on this species.

M.T.I.

281—Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere.

- a. ALLGÉN, C. A., 1953.—“Revision der freilebenden marinen Nematoden aus der Umgebung der Staatlichen Zoologischen Station Kristineberg an der Westküste Schwedens.” 81 (5/6), 548–603.

(281a) The free-living marine nematodes known to occur in the neighbourhood of Kristineberg, on the west coast of Sweden, are briefly annotated. They comprise 22 families, 75 genera, 131 species and one variety. New generic names are suggested, viz., *Cobbia acanthonchus* (Cyatholaimidae) for *Cobbia cyatholaimoides* Allgén, 1929, *Filipjevinema* for *Chromagaster latilaima* Allgén, 1929 and *Paralinhomoeus paratenuicaudatus* nom.nov. for *Metalinhomoeus typicus* de Man var. *tenuicaudatus* Allgén, 1929. A concluding general section on the biology and oecology of marine nematodes briefly considers their occurrence and significance, viviparity, predatory feeding habits, cannibalism, instances of their parasitism by other nematodes and suctoria and wound healing.

R.T.L.

282—Zooprofilassi.

- a. PASQUINI, D., 1953.—“Della filariosi canina. Generalità ed osservazioni personali.” 8 (2), 58, 60–64.

(282a) In a case of canine filariasis a clinical cure was obtained after a course of antimosan and neostibosan lasting over two months, but seven months later microfilariae were still present in the blood. Towards the end of the antimosan course toxic effects became severe. The dog received a total of 1.35 gm. of neostibosan and 280 c.c. of antimosan. Pasquini considers that the recommended dose of 1 c.c. of antimosan per 5 kg. body-weight is insufficient.

P.M.B.

NON-PERIODICAL LITERATURE

- 283—CORONEL GUEVARA, M. L., 1953.—“Observaciones sobre el ciclo biológico de *Moniliformis moniliformis* (Bremer 1811).” Thesis, Mexico, 27 pp.

Coronel Guevara describes and figures the developmental stages of *Moniliformis moniliformis* larvae in *Periplaneta americana*, following the terminology of Moore (1946). In two lots of 162 and 50 *P. americana* in Mexico City, natural infections were found in 33 and 6 specimens respectively, and larvae developed in 68 out of 84 others which were experimentally infected.

P.M.B.

- 284—MINZ, G., 1953.—[Plant parasitic nematodes.] Rehovot: “Sifriath Hassadeh”, 38+ii pp. [In Hebrew: English summary pp. i–ii.]

This well illustrated bulletin gives a list of more than 200 species of plants of economic or ornamental value which are known to be attacked in Israel by *Meloidogyne* spp. Each specific name is marked to denote the relative degree of infection, viz., single record, light, medium and heavy infestations. The main sources of infection are transplants and seed potatoes. Only maize, ground-nuts and sweet-potatoes can be profitably used in intensive crop rotations. The other plant-parasitic nematodes so far found in Israel are *Anguina tritici* in wheat and *Aphelenchoides* sp. in dahlia and salvia.

R.T.L.